

THE PERMACULTURE ACTIVIST

A Quarterly Voice for the Permaculture Movement in North America

Household Greywater Systems

David Jacke

The "Mulch Maker"

Wood Chip Greywater System

The wood chip composting greywater system was developed by Doug Clayton here at Gap Mountain Permaculture, and has been running for two years now. The system is intended to "dispose of greywater in a safe and sanitary manner and to recycle this water to a second productive use", which in this case is to hasten the decomposition of wood chip piles so the resulting humus can be used as a soil amendment. He developed this system because his research and decision was to avoid the use of greywater for irrigation because of the salting problems had by others he had talked with. It consists of a 100 gallon grease trap, followed by a 70 gallon tank with a dosing siphon, a simple switch mechanism and two 40 foot long piles of wood chips, used alternately, with PVC perforated pipe suspended in the middle of them (see Sketch 1).

The grease trap allows the greywater to cool off so that the oils and grease can float to the surface and some solids can

settle to the bottom (essentially a mini septic tank). Doug built his tanks out of fiberglass and resin for strength, light weight, and since it was available cheaply. It holds about 5 days' worth of water (maybe a bit excessive). If the kitchen sink isn't going into the system, the grease trap may not be necessary, but some way of getting out large solids would be.

The dosing siphon is a patented device which stores a set quantity of liquid and then releases it all in one dose. It does this without any moving parts to fail or electricity, by trapping an air bubble between a bell jar and a plumbing trap. This unit is needed so that the effluent is distributed evenly throughout the 40 ft pile of wood chips, rather than just trickling in at the pipe inlet. It also allows the pile to re-aerate after getting hit with a load of water, so that the decay process will be aerobic, rather than anaerobic.

The switch is a simple cast-in-place concrete chamber about 1 foot in diameter with two outlets. An elbow is fitted over one outlet and turned up to "close" that side of the switch and direct

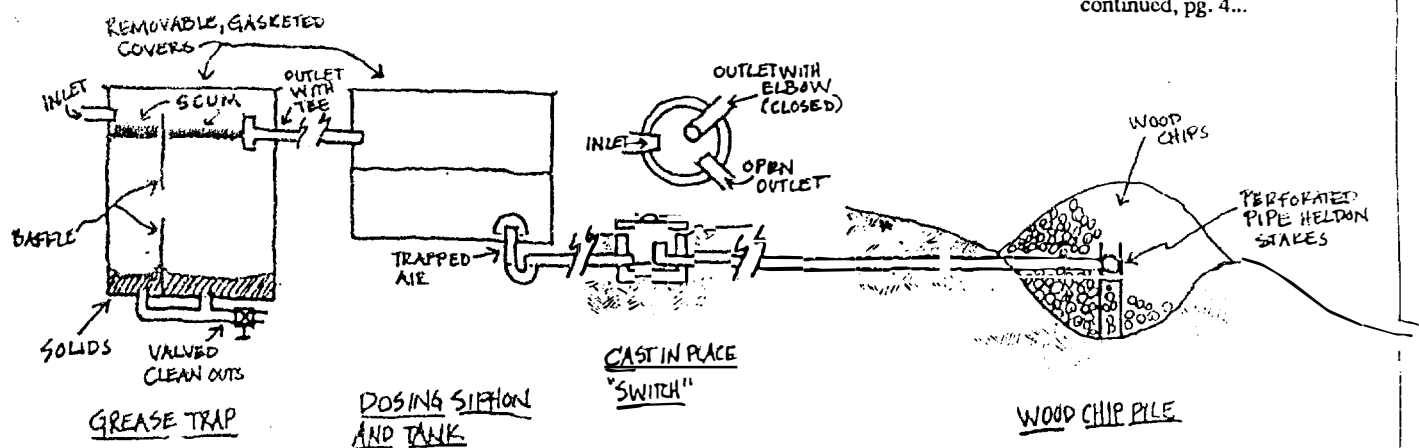
the water to the pile in use. It looks at the moment like each pile will be able to be used for a minimum of two to three years before switching to the second pile. Preliminary digging into the piles has shown that the wood chips are rotting nicely into beautiful black humus, with no odor or gruesomeness.

The piles consist of two swales roughed in with a bulldozer when building the house and then finished by hand (lots of boulders here), the diggings piled up on the trench sides as berms (to hold water in), with fiberglass (non-rotting) stakes every few feet to hold the perforated distribution pipe level as the wood chips rot down around it. The distribution pipes turn up and come to the surface at either end of the pile to allow air to flow through. Pile length and width were figured using flow estimates and the state's guidelines for leaching area based on percolation rates in the existing soil. Freezing has not been a problem, as wood chips are excellent insulation!

Wood chips are pretty abundant in these parts, and can sometimes be had by the truckload for free if you catch the road and/or utility company crews at the right time. Doug has his piles located so that the composted wood chips can be simply loaded onto a cart and wheeled downhill into his orchards for use as mulch. Sawdust from a lumber mill (also relatively abundant) could also be used.

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SKETCH 1: "MULCH MAKER" GREYWATER SYSTEM
(NOT TO SCALE)



FROM THE EDITOR

We received a lot of good material for this issue so we expanded to 32 pages. Thank you to all the authors who contributed material - the dedication and diversity of people working in permaculture never ceases to inspire me.

Subscriber numbers are still hovering at a meager 450, so this continues to be a "labor of love" (can one really grow to love staring at a computer screen for hours on end?) more than a livelihood. This has been going on for a few years now, yet I've been plugging away anyhow with the intention to publish the best information possible with the available resources.

On the plus side, the last two years have been the most active in terms of new permaculture groups and businesses. New groups have formed in Washington, California, Arizona, New Mexico, Ohio, Indiana, Texas, Pennsylvania, Alabama, Hawaii, Europe, India, Nepal, Africa and elsewhere. Scores of related organizations are making great strides to regenerate the living systems of our stressed biosphere. The general public is beginning to think and act cooperatively with a common goal to end the destruction of our Earth. And there's a lot of good work left to do.

The work of editing and publishing *The Permaculture Activist* is not continuing to satisfy my needs for creative expression. Other occupations call. Frequently I've thought, "If there are only 450 people willing to pay to read this stuff then I might as well spend my time planting trees rather than printing stuff about other people planting trees". I wonder if I might accomplish more for ecological restoration by devoting more of my time to the physical work of planning and planting permaculture systems rather than publicizing the work of others (i.e. getting permaculture "on the ground" instead of "on paper").

WRITER'S GUIDELINES

The Permaculture Activist describes the activities of individuals and organizations throughout North America who are incorporating permaculture methods in their lives and work. The name was chosen in order to promote an *active* approach to creating permaculture systems, rather than a passive, or academic analysis. Permaculture activists are observing, planning, planting, building, growing and maintaining sustainable food production systems, appropriate technologies, and economic alternatives in all types of environments - temperate, tropical, urban, rural, humid and arid lands, in "under" and "over" developed nations, and most importantly, creating change in their own lives and lifestyles.

Materials for Publication

The Permaculture Activist relies on volunteer writers to contribute feature-articles, press releases, news updates, drawings and photographs. These materials fall into several categories:

Departments

Reports from Regional (permaculture) Groups: 100-300 words

Permaculture Educational Programs: 100 - 300 words

Allied Groups: 100 - 500 words. Letters: 300 word max.

Book or technology reviews: 500 word max.

Ads: yes, we accept paid advertisements, and/or frequently give free ad space in exchange for written materials for publication.

Features

Short articles describe a simple technique in farming or gardening, the results of an experiment, the construction of a simple tool, methods for planting, managing and harvesting food, fuel and fiber crops, and even observations of natural and agro-ecosystems. Drawings and/or photographs are very valuable addition to any story. Short

Request for Proposals

Bearing in mind that *The Permaculture Activist* is not a highly profitable enterprise, I would like to "float a trial balloon" to see if anyone is interested in taking over its publication. It serves a vital function within this small but steadily growing movement. If you or your business/organization is interested in taking over the publication of *The Permaculture Activist*, contact me and we can discuss the terms. The major qualifications needed are not prior experience in graphic design, layout, computers, desktop publishing. These skills are helpful, but more important is the ability to stick with a project and see it through. We began with a typewriter, scissors and glue (almost forgot - we had a ruler and felt-tip pen too). What is most needed is initiative, imagination and love.

The transition to a new editor/publisher should be gradual. I'd suggest we work together to produce a few issues of the magazine, after which I could well stay involved in some capacity, perhaps as contributing editor. We'll keep you informed of developments in this situation.

Well, back to farming. I often remember a handpainted sign on a garden cart at Circle I Farm which boldly stated a revolutionary goal, "Reforest the Sacramento Valley" (those of you from out of the area may not realize the immensity of this task - I mean, this whole valley has been cleared, drained, diked, plowed, plowed, plowed & plowed again, sprayed, burnt, grazed, and most residents don't even realize there used to be trees here). We've just finished planting four acres of oaks - over 600 trees in all. A long ways to go, but there is a lot of joy in doing the work. Who was it who said "If I can't dance, I don't want to join your revolution" (Emma Goldman?).

Until next time, Guy Baldwin

articles are often tied together or accompany a longer piece that covers the same theme. Suggested length: 750 words max.

Long Articles provide in-depth analysis of more complex subject matter such as: a Permaculture Design for a whole property, or neighborhood, or city; a tree-crops farming system involving many species and years to grow to maturity; a proposal for developing sustainable economic system for a region; comparison of species suitable for use in a particular permaculture system; philosophical musings about an appropriate role for permaculture "land-stewards" in our troubled times. Suggested length: 2000 words max., should include drawings and/or photographs which give visual support to the written text. Longer articles may be split and run in successive issues.

Style

All material should be written in a personal style, not overly formal, as if you are having an intelligent conversation with the reader - write like you talk. Try to avoid generalizations, be concrete rather than abstract, use active instead of passive verbs, and complete sentences. Opinions are valuable, but we also want the facts, and please cite references whenever appropriate.

Deadlines

The Permaculture Activist is published quarterly. We schedule the printing and mailing of each issue so that the magazine arrives to subscribers on or about the 1st of the month. The deadline for all materials is one month prior to cover date. January 1 is the deadline for February issue; April 1 for May issue, July 1 for August issue, October 1 for November.

If you are planning to send a feature article, it is best to contact us before the deadline to see if there will be space in the upcoming issue. We do not guarantee that all materials submitted will be published. *The Permaculture Activist* will not return unsolicited materials unless accompanied by a self-addressed, stamped envelope.

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Cover art: One month prior to publication date.

Feature articles: One month prior to publication date.

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Reports from Regional Groups

Permaculture Educational Programs

Letters

Reviews and Reports from Allied Groups

Classified Ads

Calendar of Events items

Ad rate card is available upon request from

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For each issue mailed to subscribers, 25¢ is deposited in a Tree Tax Fund maintained by The *Permaculture Activist*. From time to time these funds are distributed to individuals and/or groups working in reforestation and forest preservation efforts. Recipients are selected based on need and demonstrated effectiveness of their work. To apply for funds, contact the Editor and include a short description of your project and proposed use of funds. We have approximately \$450 available per year at this point.

Projects of

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Symbiotic Inoculation Strategies for the Nursery

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Household Greywater Systems

continued from pg. 1...

Doug and I hope to write a Technical Bulletin on this system in the near future which will provide more of the nitty gritty details on design and construction.

The wood chip system is placed uphill of Doug's nursery so that it gets indirect irrigation with greywater, albeit filtered through chips/sawdust and the ground. Root invasion of the pile by planting on the berms would have to be dealt with by more frequent alternation and emptying of the piles with simultaneous root pruning, and/or by using only annuals near the piles.

One possible change is to put a second set of perforated pipes under the pile to collect the filtered effluent and direct it to a storage for later use as irrigation water. Bacteria/viruses/etc. are the biggest threat on this score, and I don't know how much chip distance is needed to filter them out to a safe level (they say four feet of sand is sufficient for combined wastewater). Making sure that there is a minimum of two to three feet of chips between the pipes at all times should help insure decent effluent renovation, but more would obviously be better. In addition, pathogen levels in greywater are usually very low, the most danger coming from diaper washings and such, since live polio vaccine viruses and other stuff can get in there. If this is a concern, then it is best to let the effluent leach into the ground, where soil particles and microbes are likely to bind and attack the pathogens before they can do any harm. Pathogens are another reason to let the pile rest after switching off and before digging in. It is important to note that the amount of water coming out of such a system is likely to be low, due to low flow rates (for a single household, at least), evaporation from the pile and inefficiency of such a collection system unless there is a clay or other impermeable barrier under the pipe to insure efficient collection.

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I have been investigating and researching household wastewater disposal systems for a number of years, looking for systems that can work in a permaculture context. Having convinced myself of the attractiveness and usefulness of composting toilets, this article will focus on treatment of greywater (everything except toilet waste and household or other hazardous wastes, i.e., wastewaters from sinks, tubs, washing machines, even dishwashers, and sometimes including urinals). Presented here are brief summaries of some of the systems I have encountered in my search, including wood chip composting, greenhouse, and constructed wetland greywater systems. I will also briefly discuss intermittent sand filters.

Please note that these descriptions are very brief, and that there are many details left out that can make the system work or not work in a safe manner. I strongly recommend a thorough investigation into local codes and regulations, and getting a good handle on the parameters and risks so you can design, build and use a safe system. If you want to build one of these based on what is here, you do so at your own risk!

Greenhouse Greywater

The greenhouse greywater system was almost made famous by the Clivus Multrum folks in years past as they bravely attempted to break down America's blind barriers to humane treatment of our fecal and other household wastes. I have seen two versions of this concept, one in Abby Rockefeller's place here in NH (over 10 years old), and the other a more down home system in Concord, MA. The system is simple in concept, but I feel has some problems, which I will discuss later. The basic idea is that the greywater goes through an initial filtration before being pumped to the greenhouse in doses. The greenhouse soils act as the effluent renovation medium, while the greenhouse plants take up some of the nutrients and water (Sketch 2). Such a system could be rigged up for irrigating outdoors in a warm climate, but in cold climates the greenhouse is used so as to get year-round operation. In effect, the system is a sand filter with plants growing in it. However, read on for the downside.

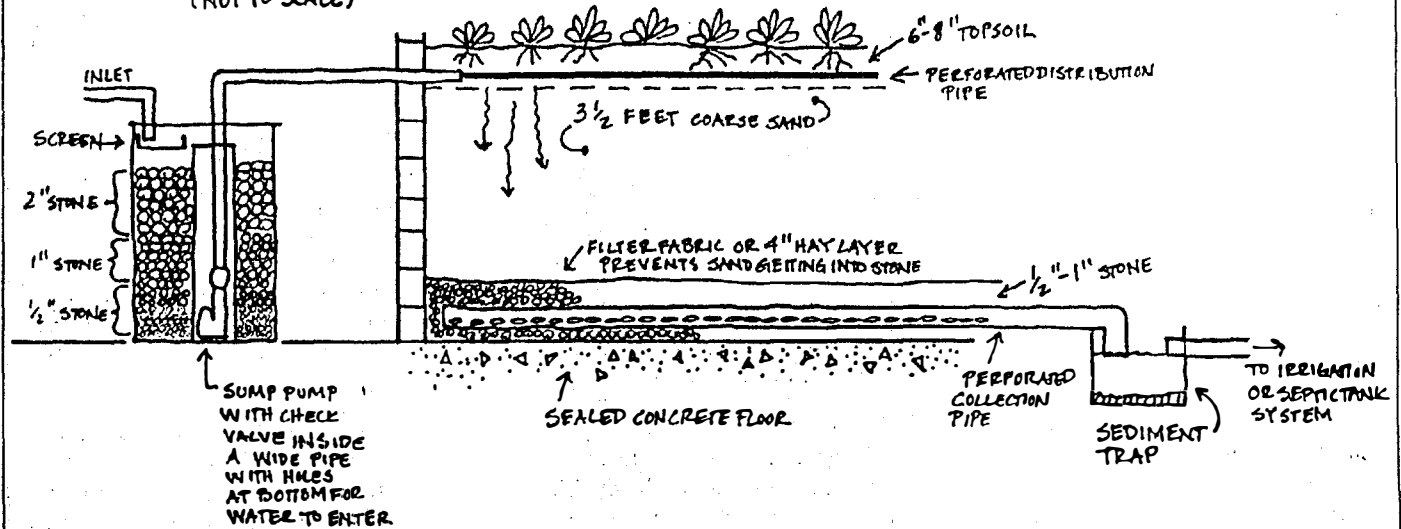
The first filtration is usually accomplished by a screen, a series of successively smaller rock sizes and then maybe some sand. Clivus Multrum has a rock filter/pump unit combo they sell/sold for the initial filtration, but the folks in Concord, MA just used an old oak barrel, with a sump pump in the bottom, filled with stone of varying size ranges. Mainly this filter is just to remove solids so they don't clog the pump or the tiny holes in the distribution lines, and it does require a modicum of maintenance to prevent filter clogging.

The filtered effluent is pumped to the greenhouse and distributed through 1" plastic pipe with little holes drilled in it. If you want to get fancy, you can use two pipes, one inside the other, the inside one with tiny holes drilled in it all facing up, and the outer one slitted along the bottom to distribute the flow more evenly and make it harder (?) for plant roots to get in and clog the pipes. It seems to me either way would work. In any case, this pipe is buried 4"-6" deep in the greenhouse beds.

In Ms. Rockefeller's case, the greenhouse beds were not earth connected, and were about 3-1/2 to 4 feet deep, with the top 6"-8" as topsoil and the rest as coarse sand. The bottoms of the beds were concrete, with collector pipes sloped to run the excess effluent into a sediment trap, and then to a septic tank and leachfield (the State of NH is very paranoid). In Concord, the beds were earth connected and they saved all the expense of the extra stuff, except a lot of leg work to get state approval.

I have seen no guidelines for leaching area requirements for such a system. Ms. Rockefeller's system served a huge house, though what fixtures actually contributed to the system was unclear (the initial filter was large), and the house was not a full time residence. The Concord system was about the same size greenhouse (+ 125 s.f. of bed), but served a three person household with two baths and a washer, but not the kitchen. I expect that percolation rates had more to do with the size of the Concord system since it was earth connected, whereas the Rockefeller installation had a standard septic system afterwards.

SKETCH 2: GREENHOUSE GREYWATER SYSTEM
(NOT TO SCALE)



The major problem with this kind of system stems from the salts (mainly from soaps and detergents, but also other things) and especially boron that can build up in the soil from continuous greywater application in one spot, especially in a greenhouse where temperatures can go high and add to the evapotranspiration rate quite radically. Some of this, especially the boron, can be avoided through use of soaps rather than modern detergents and the avoidance of anything containing boron or "borax". Bleaches are also hard on plants. Neither of the greenhouse systems I saw were in use for growing plants when I saw them (why I don't know), but they had both had a fair amount of use as greywater disposal systems and the soils didn't look salty. No one had any test results for salts or pH in their greenhouse soils to allay my fears, but they hadn't had any problems with their plants either, which is somewhat of a surprise.

The second problem, for me, at least, is the use of a pump in the system, which requires electricity. Pumping water into the house is bad enough, but to have to pump it at the other end really gets my goat! In order to use gravity and a dosing siphon one would have to get an adequate height difference (which can be difficult in some cases, especially with attached greenhouses) and use bigger pipe, which would end up hogging more space in the greenhouse bed, which is usually at a premium and is expensive to build, to boot.

For a system of this type, it is important to have some sort of alternative system for the greywater, in case someone gets typhoid fever, dysentery, or infectious hepatitis, which spread quite readily through greywater, especially when in close contact with food.

Constructed Wetlands

The use of wetlands to purify water is millennia old. It is only recently that we humans have come upon the idea of utilizing wetlands to prevent ourselves from drinking our own waste as tap water. Constructed wetlands are now being designed, built, and used in many areas for treating industrial, municipal, and domestic wastewaters, agricultural and urban runoff and acid and highly alkaline coal mine seepages.

Described here is a constructed wetland system I designed for my home in NH and spent two years trying to get approval to build, to no avail (I am hoping to get approval and build in 1990). Much of what is presented is untried for treating greywater, especially in a cold climate, though the design is derived from extensive literature research, visits to municipal scale installations and discussions with leading researchers in the field. If you want a copy of my design, some design guidelines for household systems and other information, send \$12, and you'll get a packet in return.

First of all, let me warn people against using natural wetlands for wastewater treatment, for several reasons:

- 1) the surface and subsurface flow hydraulics are much more difficult to figure out *in situ*, so that design and monitoring become sketchy, and safe and sanitary operation is much harder to assure;
- 2) the continental US has already lost almost 60% of its wetlands since colonization, so why run the risk of further disruption, and why not rebuild?;
- 3) natural wetlands are usually in low topographic position, and we would rather purify our wastewater at a higher elevation so that we can use it afterwards;
- 4) the politics of modifying native wetlands, and especially adding wastewater to them, are VERY touchy.

There are many basic types of constructed wetland systems. These include: surface flow and subsurface flow emergent wetlands, riverine mimics, marsh/pond/meadow or marsh/pond systems and a number of hybrids of these. This article will describe subsurface flow wetlands. I will review the other systems in a later article.

Subsurface flow wetlands (Sketch 3) are usually constructed with a clay and/or plastic liner (or native soil if impervious enough) and are filled with crushed stone or sand. Into this medium is planted emergent species such as Cattails (*Typha latifolia*), Bulrush (*Scirpus validus*), Reed Canary grass (*Phragmites communis*), and/or Canna Lilies (*Canna flaccida*, a southern species), among others. The water level in these systems is maintained below the surface thereby eliminating mosquito control problems,

reducing evaporative losses, and, in my estimation, improving wintertime performance in cold climate areas.

These systems work because of the physical filtration and large surface area for microbial attachment provided by the stone or sand medium and the plant roots, and because these plants in particular are known to supply oxygen not only to their roots, but also to a small region of the soil around their roots. This creates a large amount of edge between aerobic and anaerobic microsites in the root zone of the plants within the bed, which radically increases the rate of pollutant degradation because of microbial diversity and the diffusion of chemicals back and forth across the aerobic-anaerobic edge.

Surface flow wetlands are similar to the above, except that the bed liner of clay or plastic is overlain by some sort of clean fill, and the water flows through the stems and roots of the emergent species above the soils surface. Here the plant stems provide physical filtration and bacterial attachment sites as well as supplying oxygen to create microsites of aerobic activity within the water column in addition to whatever O_2 diffuses through the water surface. These kind of systems have been used at municipal scale in Canada, but for greywater treatment probably would not work due to the low flow rates and subsequent freezing potential, not to mention increased mosquito control problems.

The greywater system as designed consists of a 50 gallon surge moderator and rock filter, a distribution box, two wetland "cells" in parallel, each with a water level control, and some sort of disposal system—either trenches in the ground if need be, or a pond and/or an irrigation system if not.

The rock filter/surge moderator is basically a large garbage can with a screen at the top and a foot of pea gravel in the bottom. This unit is needed to store surge flows from a bathtub or washing machine so that the slow infiltration of the water into the marshes doesn't end up backing water up into the house plumbing and overflowing at the lowest point. It also removes large solids to help prevent clogging down the line. This kind of filter is used instead of a septic tank to prevent the water from going anaerobic before entering the marshes, which helps with the microbial processes in the marshes. The distribution box which follows splits the flow into two equal amounts for each of the two wetland cells.

Each medium for the marshes has its advantages and disadvantages in terms of hydraulic conductivity, or how easily the water can flow through, and in terms of treatment efficiency and wastewater renovation. Sand, having a higher surface area, will remove more phosphorous from the water by adsorption than will stone, which can be good or bad depending on your needs. Sand will also require a wider bed as well as a bigger bed overall because it has a lower hydraulic conductivity and less pore space per volume.

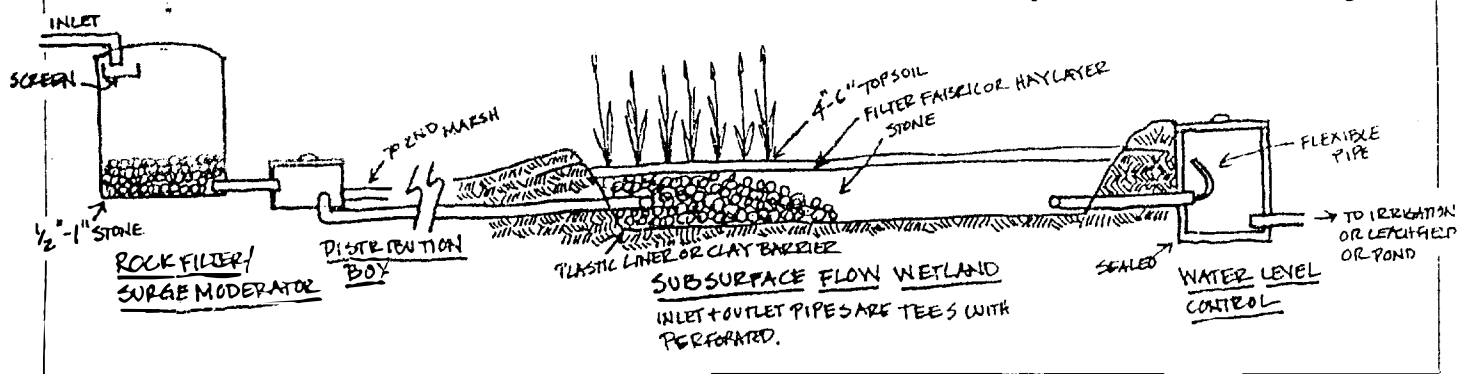
For both these reasons I chose to use stone, since I am interested in using the phosphorous in irrigation and in minimizing the bed size.

This design is also an attempt to explore the limits of wetlands operation in wintertime. Therefore, I chose to place the marshes outdoors and to try various ways of insulating them. The plan calls for use of some foam buried in the ground to create an upwelling of earth heat to the marshes, in combination with thick layers of wood chips and/or straw. In subsequent years after good vegetative growth takes place, simply leaving the plant biomass on top after it dies back may be enough. As a last resort, the marshes were designed to fit inside a standard cheapo garden greenhouse structure, which could be built afterwards. In more southern climates, these considerations are null and void, as there are many installations of wetland systems in PA, MD, KY, MS, LA, etc. with fine winter performance.

Water level control is a necessary aspect of both surface and subsurface wetlands systems. There are various means of accomplishing this, the flexible pipe shown being one of them. It is a good idea to lower the water level in subsurface marshes in the late summer and fall to encourage deep root penetration of the beds. Otherwise water can flow under the plant roots and get less treatment, especially if/when the top of the bed freezes.

A number of studies have shown adequate removal of pathogens, including viruses, from wastewaters in marsh systems, though more research is needed to confirm these. Nitrogen, suspended solids and BOD (biochemical oxygen demand) are also removed to levels adequate for surface water discharge in

SKETCH 3: SUBSURFACE FLOW WETLAND
(NOT TO SCALE)



most cases. Some fascinating work has even shown removal of heavy duty toxic organic compounds from industrial wastes! At the same time, the system I designed would be much cheaper to build than conventional septic tank leachfield systems (1/3 the cost at my site), which pollute the groundwater with nitrates anyway, while using fewer resources, and it would actually be beautiful. The biomass generated in the marsh can be used as an essentially seed free mulch in terrestrial gardens, and cattails and reed canary grass generate edibles for humans.

Potential problems with this system include the high evapotranspiration rate of the marsh in summer coinciding with the greatest need for irrigation, the removal of nitrogen from the effluent when we might like that for irrigation, and the potential for inadequate treatment during high rainfall periods. On the first point, this is what storages are for, ponds or otherwise. If nitrogen is desired in the effluent for irrigation purposes, then some other system might be better for your purposes. There is much debate in the constructed wetlands field as to how to deal with high rainfall and other extremes in design, and many conclude that you just have to over build. My feeling is that if you are only dealing with greywater, the concerns are much smaller. The level of concern is also dependent on the type of disposal system used (trenches, surface water, or irrigation). In general, however, constructed wetlands have a lot of potential for dealing with our wastewater recycling needs.

Intermittent Sand Filters

Intermittent sand filters have been developed mainly for use with combined wastewater, but are eminently adaptable to greywater treatment: "... the application of pretreated graywaters to intermittent sand filters may be advantageously employed. There is some evidence that higher loading rates and longer filter runs can be achieved with pretreated graywaters" (EPA, 1980, p. 116). The Ifo company in Sweden has developed a whole set of components to sell for buried sand filters for greywater treatment in accord with Swedish regulations. These are hard to get in the U.S., but not impossible.

The advantages of sand filters over some other methods include very clear design guidelines, furnished by the US EPA (EPA, Oct., 1980, Design Manual: Onsite Wastewater Treatment and Disposal Systems, EPA 625/1-80-012); and a solid record of research showing good removal of pathogenic organisms (2-4 logs, i.e., reduction to 1/100th - 1/10,000th of influent levels), BOD, suspended solids, phosphorous and nitrogen, producing "high quality effluents" (if you are a purist). As an alternative to the conventional, full-sized septic tank/leachfield systems many states require for greywater, they are almost sure to be lower in up-front cost while providing water useful for irrigation or other purposes.

Sand filters are sized based on various characteristics of the sand itself, as well as flow rates and filter type. They can be built as buried filters, free access filters, or recirculating filters which require pumps. Buried filters are harder to maintain and replenish, though they don't show above ground, and unless there is a good slope to the land will need a pump for getting the filtered water back to the surface for use. They are loaded at approximately 1 gpd/sq. ft. or less, depending on media and effluent characteristics. Free access filters have removable covers for regular maintenance, which makes them last longer and easier to replenish. They can also be built above ground to facilitate access to the filtered effluent, although the filter must be kept warm in winter if it is to function properly. Free access filters can be loaded at between 5 and 10 gpd/sq. ft., the higher number being more appropriate for greywater as it is less polluted. This type of filter is what I would choose were I to use a sand filter. Pumps break down and cost electricity, so I avoid them when I can, which eliminates recirculating filters from consideration unless there is a need for an extremely high quality effluent. Recirculating filters actually take more space than the simpler free access filter (3-5 gpd/sq. ft.).

Sand filters must be dosed to function properly. Dosing makes the sand medium, and therefore the biological community, alternate between aerobic

and anaerobic conditions. This alternation provides the conditions for optimum elimination of organic compounds and transformation of pollutants into other forms. Many distribution techniques can be used, including ridge and furrow application, drain tile distribution, surface flooding and spray distribution. Most buried filters use tile distribution, and most free access and recirculating filters use surface flooding distribution in an attempt to insure even spreading of the effluent over the filter surface.

The greatest amount of wastewater renovation takes place in the top 9-12 inches of medium, but most filters are a minimum of 24" deep. Shallow bed depths help keep installation and replenishment costs low, as well as facilitating gravity runoff of filter effluent.

I have heard recently that some states are doing away with allowing sand filtration of combined wastewater due to their need for maintenance, which doesn't always take place. Indeed, this is one of the drawbacks of sand filters: they need periodic raking and resting, and, once in a longer while, complete replenishment of the sand medium. The required resting means that two must be built, each the standard size, and this takes a fairly large area. Again, the size is reduced when treating only greywater, but two systems can still take up a lot of space.

The other difficulty is figuring out how to make the sand filter itself a multiple function unit. Thermal mass? Use the covers as part of a deck surface? Basement space filler? What makes the most sense to me is to turn it into a wetland and grow plants in it, but then the size increases, as does the evapotranspiration! Alternatively, the greenhouse greywater system described above is similar in some ways, though not as well documented in terms of effluent quality or longevity. Clearly, however, intermittent sand filters can be useful in a number of situations, and may be relatively easy to get health department approval for given the quantity of data available for their design and construction.

Air-Earth Interface Model for Sustainable Agriculture

Robert M. Dixon and Ann B. Carr,
The Imprinting Foundation

The Air-Earth Interface (AEI) model grew out of a quarter century (1960-1985) of basic and applied research conducted by the senior author and several associates under a wide diversity of biotic, edaphic, and climatic conditions. This model encompasses the four inter-related processes: Desertification, Infiltration, Imprinting, and Revegetation. All four processes are greatly affected by two interacting physical properties of the soil-surface microtopography (roughness) and microporosity (openness). Thus the roughness-openness interaction functionally unifies the four processes to form the AEI model.

Desertification, which is triggered by human activities, denudes, smooths and seals the AEI to greatly decrease the rainwater infiltration with resultant drying of uplands and flooding of lowlands. Roughness and openness interact to simultaneously funnel rainwater into and displaced air out of the soil. Thus the rough-open vegetated surface rapidly exchanges rainwater and soil air across the AEI, whereas the smooth-closed desertified surface greatly impedes this fluid exchange.

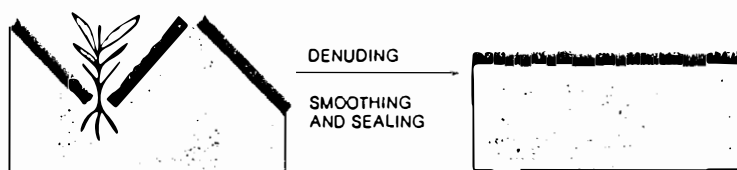
Imprinting is a mechanical process which directly counteracts desertification by converting the smooth-sealed surface into the rough-open condition, thereby accelerating both infiltration and revegetation processes. Through downward acting forces, land imprinters form smooth-walled, funnel shaped depressions well suited to performing the fluid exchange function of the AEI.

Revegetation is the process by which plant communities, destroyed by desertification, are restored at the AEI. Imprints aid revegetation by funneling seeds, water, topsoil and litter together where these resources can work in concert to germinate seeds and establish seedlings. Imprints also protect young seedlings from the dessicating effects of the hot sun and dry wind through microclimatic moderation.

Land imprinting is a relatively benign land treatment, disturbing the soil and existing plant communities very little. Unlike conventional tillage and planting equipment, imprinters do not dig into, loosen, and invert topsoil, destroying useful plants and covering protective plant residues in the process. It does not make continuous furrows which bleed water and topsoil down hillsides during intense rainstorms and rapid snowmelt.

The firm and minimally disturbed imprint surface favors the germination of perennial plants relative to annuals, thereby reducing or eliminating the need for herbicides and accelerating the succession of plant communities toward the land management objectives. Often the restoration of plant communities involves the interseeding of a missing component such as perennial grasses in severely overgrazed Southwestern rangelands. Land imprinters have successfully re-established this missing component on several thousand hectares of land in the Sonoran Desert region of Arizona during

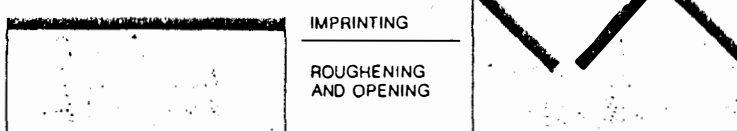
1. DESERTIFICATION



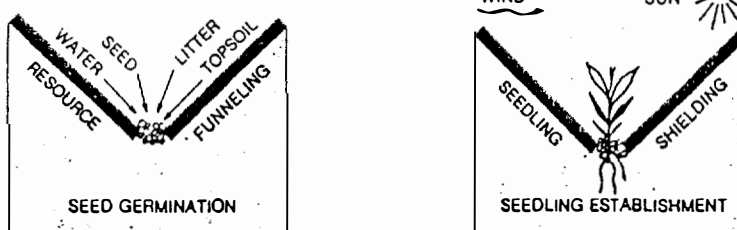
2. INFILTRATION



3. IMPRINTATION



4. REVEGETATION



AEI Model for Sustainable Agriculture

Desertification: A process that denudes, smooths, and seals the earth interface to inhibit infiltration and revegetation processes.

Infiltration: A process that exchanges rainwater and soil air across the earth-air interface (AEI). Infiltration is rapid across a rough-open AEI and slow across a smooth-closed AEI.

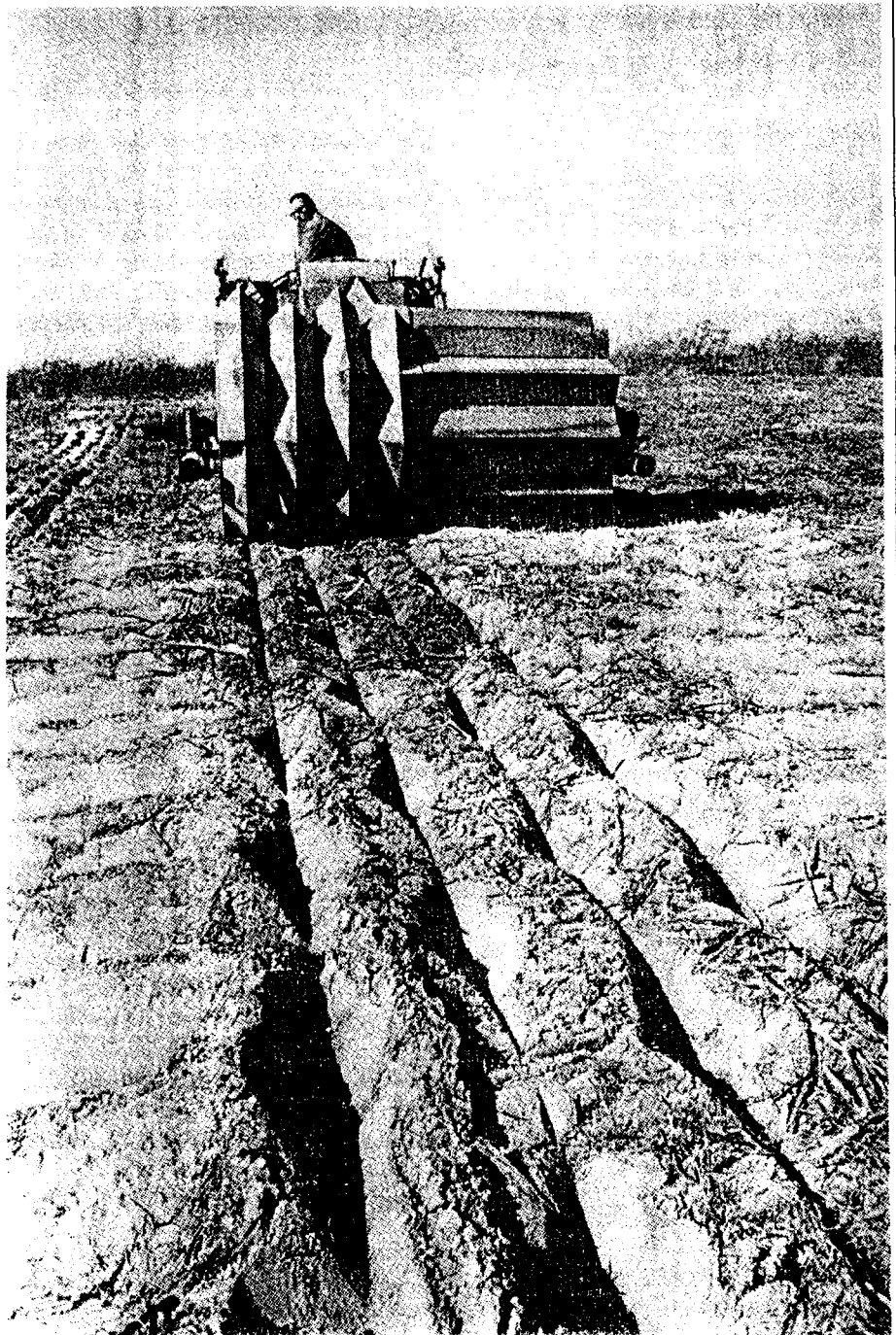
Imprinting: A process that roughens up the smooth-closed AEI to accelerate infiltration, revegetation and desertification reversal.

Revegetation: A process, beginning with seed germination and seedling establishment, that needs, creates, and maintains a rough-open AEI to reverse desertification and to rebuild topsoil.

the past decade. Half shrubs, which have colonized the areas once occupied by perennial grasses, are chewed into a mulch as the imprinting teeth are forced into the soil, thereby reducing both transpirational and evaporational losses of limited soil moisture. These shrubs resprout, but are usually crowded out by the seeded perennial grasses after 2 or 3 years of the accelerated plant succession. In contrast, conventional methods involving herbiciding and plowing have often regressed the plant community back to the starting point of annual forbs such as tumbleweed.

Imprinting has also been effective in revegetating abandoned cropland and areas severely disturbed by urban and industrial development. It can be applied to agroforestry or tree farming of marginal cropland and rangeland areas which are currently undergoing rapid desertification. Tree farming can not only stop soil erosion and start topsoil reconstruction, but also can provide a substitute for fossil fuels, the combustion of which gives off large quantities of the global warming gas, carbon dioxide (CO_2). In contrast tree farms absorb more CO_2 via photosynthesis than is given off by respiration. Rebuilding of topsoil also ties up large quantities of CO_2 carbon in the form of organic matter and soil organisms.

The land imprinting approach is ideally suited to establishing complex plant communities of forbs, grasses, shrubs, and trees through the seeding of complex seed mixes containing as many as 15 species. Such mixes have been successfully seeded into complex imprint geometries designed to satisfy the germination requirements of each species. Currently, the seed mix is scattered over the soil just ahead of the imprinting roller; however, future refinement will entail placing the seeds of each species into isolated imprints designed to satisfy specific germination requirement. This segregation will promote both seed germination and seedling establishment, especially for species having widely different germination requirements and seedling growth rates.



A rolling imprinter restoring surface roughness and openness to accelerate rainwater infiltration into overgrazed rangeland near Tombstone, Arizona. Numerous other designs are available.

The AEI model serves to steer cultural practices away from those which desertify the AEI and towards those which restore its natural hydrobiological function. Natural functioning of the AEI is essential to reversing the land desertification and achieving sustainable agriculture.

Editor's note: this article was originally published as IF paper no. 006, 17 March, 1989. Reprinted with permission from The Imprinting Foundation; 1232 E. Big Rock Road; Tucson Arizona, 85718 USA; tel. (602) 297-6165.

Opportunities for Broadscale Permaculture in Pending Legislation

Larry Smith

Based largely on my observations during the pre-IPC III tour in New Zealand as well as several "Permaculture" sites here in the States, I can flatly say that permaculture is long on promise but well short of viable implementation. Without exception, my observations have revealed compromised permaculture systems relying excessively on limited activities, on major sources of outside employment, and on unacceptably long periods of conversion.

In spite of foregoing, I remain committed to the exquisite concepts of permaculture and believe they must be acted upon and further encouraged in order to bring humanity towards a healthier future condition. After all, it is not the fault of permaculture, for example, that all major economic systems do not adequately encompass resource conservation.

Appropriate land stewardship is a particularly important consideration, and will have to be carried out in a manner that is both ecologically and economically sound. This is not the current situation in any modern society and long-term historical models are essentially non-existent. Sustainability, then, remains an ongoing challenge both within and external to the permaculture community.

What has seriously, though not exclusively, impaired the implementation of permaculture is our virtual economic exclusion from major agricultural, forestry, and other land-use programs in their present form. Some encouraging new thinking with respect to sound land stewardship, however, has begun to emerge and take the form of pending legislation. Of particular note are two omnibus conservation proposals for a 1990 Farm Bill, hereinafter referred to as the Fowler (S.970) and Lugar (S.1063) bills as well as the Global Warming Prevention Act (H.R.1078) which will be called the Schneider bill. All of these bills should create the

potential for ethical and economically viable permaculture participation in sustainability oriented Federal programs.

The Fowler and Lugar bills have been characterized by some analysts as two very different starting points. The Fowler bill contains many of the proposals environmentalists would like to see enacted, whereas the Lugar bill will more likely be supported by commodity and producer groups. Provisions that are adopted in the new farm bill are likely to incorporate elements of both.

Other conservation bills have been and will continue to be introduced. Observers, however, tend to agree that the Fowler and Lugar bills provide the starting point for developing a conservation title in the 1990 farm bill. Relevant topics addressed in the two bills include erosion problems, wetlands protection, forest resources, low-input or alternative agriculture, and certification of organic foods.

Prior to the discussion of these bills' major provisions, however, it would be helpful to summarize the best features and worst deficiencies of the 1985 Farm Bill. It contained provisions which some have called the most significant enactment of resource conservation legislation in the last 50 years. The 1985 bill included four major new conservation provisions: The Conservation Reserve Program (CRP- originally set at 45 million acres), Sodbuster, Swampbuster, and Conservation Compliance. The reserve program pays farmers who retire highly erodible land for 10 years, while swampbuster, sodbuster, and conservation compliance prohibit many federal farm program benefits to producers who drain and cultivate wetland areas, or who begin or continue to cultivate highly erodible lands.

Since 1985, environmental and conservation groups have further refined and defined the elements that would comprise more environmentally benign agricultural policies. The agenda of these groups has expanded beyond traditional water and soil concerns to include groundwater,

agrichemical issues, and the removal of disincentives for producers who seek to implement alternatives to conventional farming.

Since 1985 subsidy programs have been sharply reduced but still encourage large-scale, specialized and high-input farming. In 1986, for example, the largest 25% of all farms obtained more than 90% of the government's \$25 billion largesse. Subsidies are rapidly losing appeal in Congress, but it is likely that some of these funds may be diverted to rural development programs. The CRP has also been effectively capped at 31 million acres due to budget cuts, and enrollment in the program was never as high as had been anticipated. Moreover, the percentage of the CRP planted to trees has not exceeded about 6%, or less than half the law's instruction, with most of the planting occurring in only in the southeastern states. Greater diversity of forest types and species remains a program deficiency. Clearly, then, alternative agricultural systems will require further incentives and reduction of economic risks which can accompany environmental protection efforts.

The Fowler and Lugar bills could do much to correct these deficiencies in the 1985 Farm Bill, yet they would at best accomplish a "reformed agriculture", which would still be substantially inconsistent overall permaculture objectives such as creating local self-sufficiency and shifting income reliance away from ecologically detrimental monocultures. Nevertheless, a review of these bills should offer encouragement and reveal important potential opportunities for implementing permaculture schemes.

The erosion proposals, for instance, would expand the CRP from 31 million acres to between 55 and 60 million acres in the Fowler bill. Producers could use enrolled land for economic returns during the last three years of the contract in exchange for a permanent conservation easement.

Under wetlands provisions, both bills would create wetlands reserves and strengthen the definition of "swamp-busting". Fowler's bill establishes at least a 1 million acre wetlands restoration program using permanent easements,

Cost sharing of up to 100 percent would be paid to restore wetlands in compliance with an approved plan.

Lugar's bill would initiate a wetlands reserve of 2.5 million acres, but restoration cost sharing is limited to 50 percent or less. Contracts of 10 to 15 years would be offered in lieu of permanent easements and include compensation for maintenance. The combination of incentives and permitted uses allowed for in both bills may very well promote aquacultural schemes.

It is perhaps the forestry provisions of both bills that are most encouraging. The Fowler bill would require that, to the extent practicable, not less than one-half of the acres enrolled in the CRP for 3 of the 5 years of the 1990 Farm Bill term be planted in trees. Contracts for establishing and maintaining areas planted to hardwoods would be 15 years. Highly erodible pastureland would also be eligible if planted to trees. Provisions (in the 1990 Farm Bill) that allow shelterbelts, windbreaks and riparian lands into the CRP would be strengthened. Other eligible land could be added, including wildlife corridors, critical habitat, living snowfences, and contoured grass strips.

The Lugar bill calls for maintaining the current amount of land in forests by means of a national "no net loss" policy using the CRP, Agricultural Conservation, and Forestry Incentives programs. One section would allow land to be enrolled in the CRP as windbreaks or shelterbreaks regardless of erosion rates. The maximum participation limitation of 25 percent of the cropland in a county would not include these lands or CRP grasslands converted to hardwoods. New tree-planting incentives would include a 50% Federal cost share with payments over a 2-4 year period, or longer if more than 10 acres were enrolled. Another section would encourage expansion of urban forestry efforts by reallocating funds for urban forestry research, education, and technical assistance. Additional information on types of hardwoods and economic activities permitted under these provisions would be especially important in assessing their relative attractiveness for permacultural schemes.

Only the Fowler bill contains extensive proposals for low-input or alternative agriculture. The bill would require the Department of Agriculture to develop low-input technical guides within one year of enactment. Producers intending to implement alternative methods and wishing to receive benefits would be required to submit management plans based on these guides. The plans would describe a 5 year transition program, including how erosion rates would be reduced or eliminated. Eligibility is limited to those who substantially operate their farm, and who are capable of implementing a transition program. Producers enrolled in the program would be guaranteed that commodity program crop prices not decline below the 1989 price and that acres devoted to a legume as part of an approved rotation be considered as acreage planted to that crop. Up to 40 percent of an average base acreage could be planted in an approved legume or legume/small grain rotation and still qualify. The program would further provide 50% cost sharing for establishing an approved legume crop rotation, or cost sharing to establish other vegetative cover that provides full season coverage and protects the land from weeds and erosion.

Both bills have an organic certification provision but offer no special incentives for organic production operations.

While the Fowler and Lugar bills comprise important new thinking, no discussion of potential major, perhaps even revolutionary changes in agricultural and forestry policies would be complete without inclusion of the Schneider bill. The primary focus of this bill is to establish comprehensive national energy planning, production, and use policy in which conservation and renewable energy sources will become key elements in the reduction of greenhouse gases and other pollutants. Title VIII - U.S. Forest and Agricultural Policies represents only one title of twelve in this mammoth piece of legislation, so bear this in mind as I outline the major elements of Title VIII :

Title VIII - US Forest and Agriculture Policies

- Requires report assessing the extent to which the nation's lands are being reforested, an evaluation of increasing the rate of reforestation and afforestation, and the impact of such measures on mitigating the global "greenhouse" effect;
- Requires National Academy of Sciences' report on linkages between agricultural production and global climate change, an assessment of potential changes that could occur, and recommendation of sustainable management practices to minimize detrimental impacts;
- 5-year authorization of \$100 million for the Agricultural Productivity Research Program, designed to help farms fix nitrogen and carbon, and reduce dependence on fossil fuel inputs;
- 3-year authorization of \$39 million for development of an Integrated farming R&D program designed to promote ecologically sustainable production of cost effective renewable fuels and other multiple economic outputs (\$13 million for each of FY91 to FY93)
- Mandates a comprehensive report on R&D necessary to establish a National Farm Ethanol Program, and analysis of incentives necessary to stimulate production of ethanol feedstocks;
- Establishes an urban tree planting program designed to reduce the "summer" heat island" effect in communities, leading to reduced energy costs and CO₂ emissions (\$100 million authorization);
- Expansion of the Conservation Reserve Program to 65 million acres; [Note: Studies show that farmers could simultaneously reduce soil erosion and diversify their production by growing tree crops that can be used as biomass fuels - the CRP could provide 40% of the biomass necessary to replace all U.S. coal electric plants as they are retired with high efficiency steam injected gas turbines]
- Revises the Tongass National Forest Land Management Plan to protect the old growth rainforest;

Title XI- Development Assistance- should also be mentioned if only to the extent that it would establish both Bilateral and Multilateral Tropical Forestry and Agroforestry Programs to promote reforestation, afforestation, agroforestry, and similar goals in developing countries.

continued, pg 28...

The Solar Box Cooker: A Permaculture Essential

by Chris Roth

From my perspective the permaculture literature has a gaping hole—it omits, as far as I can tell, the incorporation of box cookers in permaculture design.

A solar box cooker is a well insulated box, lined with a reflective material such as aluminum foil, single- or double-glazed at the top, with a single, adjustable back reflector which can close down as a lid. A black tray on the bottom of the oven, and dark cooking pots, convert sunlight directly into heat, which is trapped inside the "super greenhouse" of the oven. Temperatures typically reach 250°-300° and above, and virtually any type of food can be cooked—except pizza, quiche, and double-crust pies (cooking pasta and canning low-acid vegetables needs also to be done elsewhere).

Solar box cooking, like permaculture, takes planning—since food takes 1.5-2 times to cook as it would on a stovetop, and since it needs to cook when the sun is out, it needs to be put out earlier in the day. Once the food is in, however, it needs almost no supervision, except for occasional refocusing with harder-to-cook foods such as some dried beans, or with foods requiring high temperatures such as bread, or on partially cloudy days. There is almost no danger of overcooking, except with leafy greens, and food will stay hot in the cooker well after sundown, especially if the reflector lid is lowered. Solar box cooking retains flavor and nutrients better than high-temperature cooking techniques do, so most solar-cooked food is tastier and more nutritious than conventionally cooked food. And although "cooking time" is longer, the "cook's time" is considerably shorter. When living in northern Arizona, I would measure out some grains and beans and water (1/4 less water than on a stovetop), put some washed vegetables in a pot, and put them in the solar box cooker, all as I was finishing breakfast. In the evening, when I returned, a hot dinner would be waiting

for me.

Solar box cooking can be done year-round in the tropics, and six to eight months of the year in most other areas of the world, on any day with at least a few hours of full sun near mid-day. Cooking can also be done in mid-winter under the right circumstances—one of my most satisfying solar cooked meals was cooked on winter solstice in northern Arizona with snow on the ground. A solar cooker can also double as a "haybox" or "hotbox" (a traditional fuel-less cooker—basically an insulated box) to cook food on cloudy days after it has been brought to a boil and simmered on the stove a few minutes. It can also be used to pasteurize or heat water, disinfect medical equipment, sterilize dishes, and keep a summer kitchen cool (by keeping cooking out of the house).

Solar box cookers, like gardening, inevitably make one more aware of the weather and more appreciative of the sources of our existence—the sun and the earth. For me, solar box cooking has been an almost spiritual experience—it restores a sense of "natural" time, in which things happen more slowly, more gently, with more consideration of the whole, and less destruction than they do with our high-temperature, high-speed, energy-consuming cooking techniques. Solar box cooking puts us in a position more of cooperation with than dominance over natural elements. Such an approach contradicts all of what our violent, consumptive, nature-destroying culture has taught us. The fact that it works can only inspire humility and gratitude when we understand that we don't have to smash the earth to pieces in order to live—that the sun and the earth will support us better, in fact, if we have faith in the integrity of natural processes, and make "low-impact" instead of "high-impact" choices whenever we can. We don't need to cook "solar or not at all," but we can choose to cook solar whenever possible.

Solar box cookers are easy to build, and require almost no maintenance once built. For us, and for people all over the

planet, they can not only save "cook's" time, but also time spent gathering fuel materials or earning money to buy energy with which to cook. (The energy all originated in the sun anyway—we can work extra for yesterday's sunlight, or use today's for free.) I haven't even mentioned yet what is perhaps the most compelling reason to adopt solar cooking technology: spreading environmental degradation, in the form of deforestation, soil depletion and erosion, desertification, air pollution, greenhouse gas buildup, and accumulation of toxic and long-term nuclear wastes, brought about by our current ways of using energy. Solar box cooking, like the rest of permaculture, provides a positive alternative to the "doomsday" of following our society's current habits to their bitter end. It can help us both spiritually and physically reintegrate into the natural order; and besides, it's fun.

Among the permaculture demonstration and/or teaching sites which already have and use solar box cookers are: The Bear Tribe Medicine Society in Spokane, WA; Aprovecho Institute, in Cottage Grove, OR; Linnea Farm on Cortes Island, British Columbia; Springtree Community in Scottsville, VA; Earthworks in Plymouth IN; Dandelion Community in Enterprise, Ontario; and Long Branch Environmental Education Center in Leicester, NC. Other communities involved in developing sustainable lifestyles which are also using solar box cookers include: Sun Mt. Research Center in Tollhouse, CA; Bountiful Gardens in Willits, CA; Sandhill Farm in Rutledge, MO; Camphill Village/Kimberton Hills in Kimberton, PA; and Shannon Farm in Afton, VA. Numerous other individuals and groups involved in sustainable lifestyle/permaculture work use solar box cookers as well.

A non-profit organization called Solar Box Cookers International has formed to disseminate information and promote solar box cooking "for health and environmental benefits worldwide." It has created excellent educational materials for use both in "developed" countries and in the "Third World," where many people still cook over open fires (and breathe the equivalent of 200 cigarettes a

day when they do it indoors). The scarcity of fuelwood, dung, and other fuels, and the abundance of sunshine, make adoption of this simple technology a logical next step for "Third World Permaculture." (Unlike other high-tech solar cooking methods which preceded it and "failed" in several Third World development projects, it is convenient and can be adapted to use largely local materials.) It also belongs at every First World permaculture site, in a sunny location near the kitchen.

For more information:

Solar Box Cookers
International
1724 Eleventh St.
Sacramento, CA 95814
(916) 444-6616
FAX (916) 447-8689

For information, plans, and kits, write

Kerr Enterprises, Inc.
PO Box 27417
Tempe, AZ 85282
(602) 968-3068

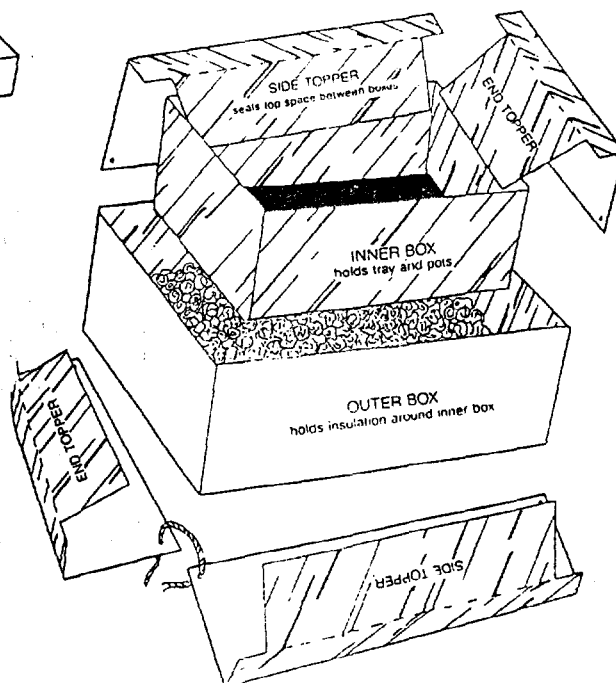
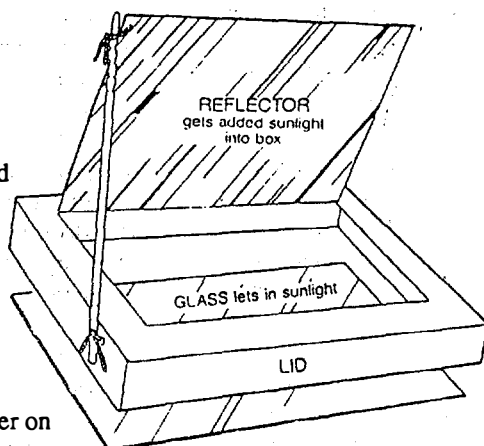
To subscribe to a newsletter on this subject contact:
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Editor's note: Chris Roth, known to some permaculturists as the gardener at Aprovecho Institute for two years ending in the fall of 1988, has been building and using solar box cookers, among other pursuits, for the past five years.

AN IDEAL COOKING STOVE

REQUIREMENTS	SOLAR BOX COOKER	FUEL-EFFICIENT STOVE	ELECTRIC STOVE	GAS/KEROSENE STOVE	WOOD/DUNG FIRE
Free Fuel	✓	✓
No Smoke.....	✓	...	✓
No Constant Watching	✓
No Burned Food.....	✓
No Electricity.....	✓	✓	...	✓	✓
No Need to Buy Fuel.....	✓	SOME	✓	...	✓
No Collecting Dung/Wood	✓	...	✓	✓	...
Inexpensive	✓	SOME	✓
Can Build Yourself	✓	SOME	✓
Cook Several Foods at Once.....	✓	SOME	✓	✓	...
Reduce Deforestation/Desertification ..	✓	SOME	SOME	✓	...
Reduce Fossil Fuel Use.....	✓	✓	SOME	...	✓
Reduce Soil Depletion	✓	✓
Reduce Air Pollution	✓	SOME	SOME



Illustrations from: The Solar Box Cooker Handbook by Solar Box Cookers International - a nonprofit organization promoting solar cooking to help people and environments worldwide.

Grass Roots Approaches to Forest Loss

FERN, The Tree Bank, and Fate of our Forests Conferences

Dan Hemenway

The Permaculture Activist readers doubtless are familiar with the global forest crisis. World forests are dying at an alarming rate. Essentially all tropical rainforests are likely to be cut sometime in the next decade or two. Rarely do tropical rainforests regenerate. Acid rain and related air pollution poison North Temperate Zone forests wholesale. Where cutting formerly triggered abundant regrowth and regeneration, forests now die back and fail to reproduce well. In some places in North America and presumably in Europe and Asia, all plant life has ceased to reproduce. In less advanced stages, seedlings fail to establish, spongy organic mats on forest floors are replaced by hard, eroding, pavement-like surfaces, and trees, which become more brittle in the process of dying, strew branches broken from wind and ice, potential fuel for ravaging forest fires. Regeneration of mature forest species—e.g. oaks, beeches, sugar maples—is uncommon in much of their ranges, though as yet not rare. Almost as common is desertification of wet temperate landscapes, particularly ridges, where pollutants accumulate to levels which permit little or no plant growth, destroy tree roots and related fungal systems, and “burn” away root hairs of germination seeds.

The combined effects of cutting tropical forests (and remnant old-growth temperate forests) and poisoning temperate forests, accelerate planetary deforestation at a rapidly increasing rate. Violent weather, climatic destabilization, and amplification of climatic extremes—drought, flood, wind, cold and heat—and general desertification add further stress to the remaining trees. Since such spasms are particularly pronounced in agricultural regions, the effects of deforestation on human populations are drastic and already final for some cultures. The Earth herself may be exhibiting spasms in part due to deforestation as massive shifts in crustal forces resulting from moisture translocations and extensive soil erosion, contribute to

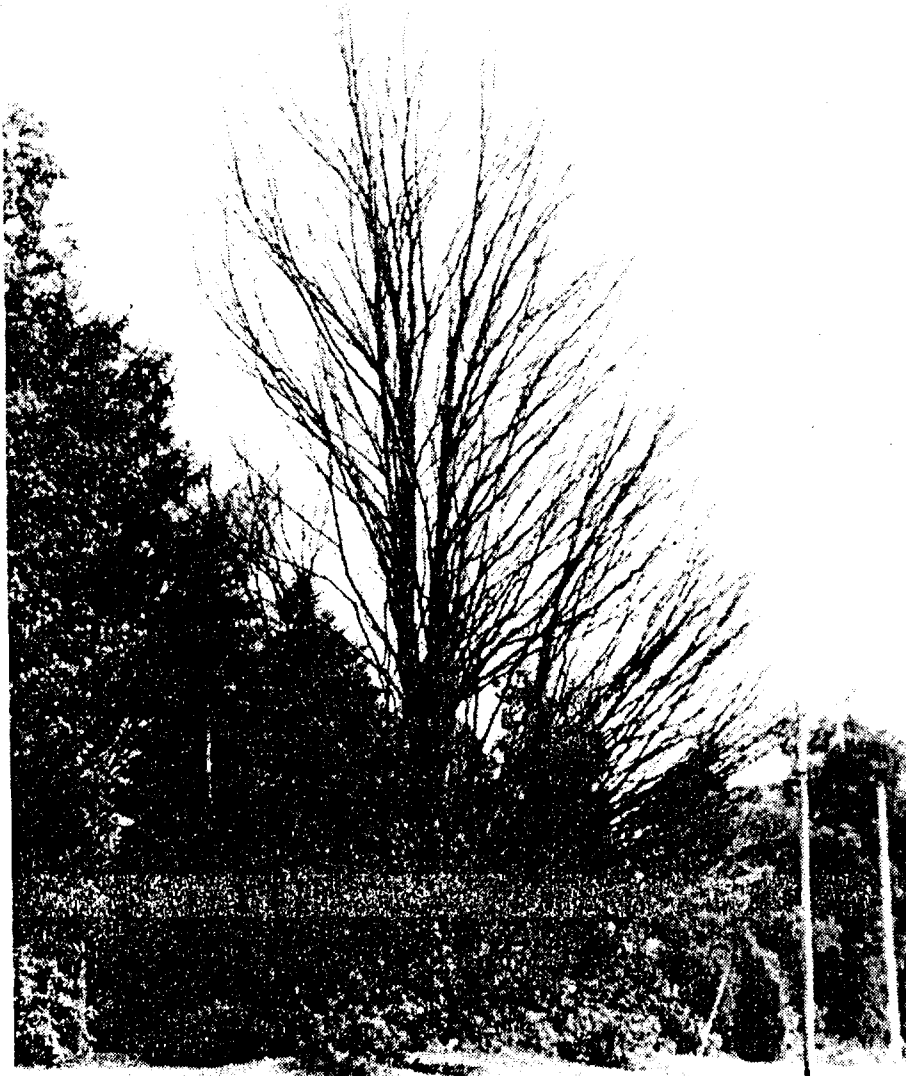
tectonic activity—quakes and possibly volcanoes—and may ultimately trigger precession, when the Earth abruptly shifts her axis of rotation to readjust the greatest mass toward the equator.

I was aware of these concerns in February of 1987 when my friend Minot Weld sent a clipping from the *New York Times* reporting scientific opinion that the current “decline” among sugar maples may culminate in their extinction. I became suddenly aware reading the Times article, that massive loss of genetic diversity was already happening.

We may not have, indeed probably do not have, time to redress the destructive practices and attitudes characteristic of Western Society before we are past the point of no-return for entire forested regions, such as New England and much of Quebec, and we may be already past the point of no return for species native to these regions to survive at all.

These were my thoughts a few days after receiving the *Times* article, as I flew to Ireland on the first leg of an international permaculture teaching tour. During a Permaculture Design Course there, I developed the Tree Bank concept

Dead Sugar Maple surrounded by severely stressed spruces in Northeastern temperate forest. Copyright © 1986 Dan Hemenway.



for reserving species. Ireland is a deforested country with pollution as yet sub-lethal to trees in some regions, particularly the west, where reforestation could occur. Polyculture plantations would reflect simplified (necessarily) replica of natural species associations. Seed would be selected for genetic diversity, with no regard for traits seen at this moment of history as useful to humans. Enough genetic diversity planted in enough regions would essentially preserve the genetic make-up of entire species. The Irish were not interested.

Months later in New Zealand, during a 7-week blitz in which I delivered 20 presentations and workshops and 15 media interviews, the idea came up again. New Zealanders were and are interested in establishing a Tree Bank, and a group organized at the Festival of Cooperation there established Tree Bank Trust as a legal entity about a year later. Several hundred hectares of deforested land are already pledged for planting and some movement is underway by Swiss and German parties to ship seeds from species dying in those countries.

The Tree Bank concept, as initially presented and as further developed in the pages of *Robin* (our newsletter for the Forest Ecosystem Rescue Network and for the Solutions Network), stresses protection of remnant indigenous ecological elements and healing and planting of native forest ecosystems as the absolute first priority. The net ecological effect of Tree Bank on New Zealand or other potential host regions will be positive or it won't go forward.

Going forward too fast hasn't been a risk to date. In North America we have lacked the funds to go forward at all. Therefore the purpose of this article is to frankly ask you to pitch in. My wife Cynthia Baxter, and I have given everything we can and continue to give of our lives and small financial resources as best we can. The fate of our forests is everyone's responsibility.

With money, we can begin to work on the following list of tasks:

1) Calling for a conference or a series of regional conferences on the Tree Bank as part of our response to forest decline. (Efforts to halt pollution and develop

adapted strains are essential as well.) From these conferences would come an organization and workers to carry out the Tree Bank seed collection and documentation needed.

2) Outright purchase of quantities of seed to ship to New Zealand. Commercially available seed would not be as desirable as seed gathered with Tree Bank growers experienced in germinating these species and establishing plantings, and maintaining the momentum of enthusiasm for the project in New Zealand where growers are eagerly awaiting seed.

3) Support mailings to publicize the concept internationally among some 1200 alternative publications and environment editors and reporters, 2,000 appropriate organizations worldwide, and several thousand individuals on our mailing lists of people particularly concerned with trees.

4) Support regional meetings and workshops for Fate of our Forests (FooF) groups to form and take direct action with available resources to protect and heal forests, including work on Tree Bank where appropriate.

5) Support publicity through above-mentioned media and interested parties for the third round of FooF conferences, which are held simultaneously anywhere sufficient interest exists. This will be over a weekend around September, 1990, to encourage Tree Bank thinking—seed collection in the Northern Hemisphere tapping spring impulses for renewal and rebirth.

6) Support of eventual development and distribution of handbooks on organizing Tree Bank collection groups and organizing Tree Bank planting groups.

7) Support of completion and distribution of a slide presentation and script on the decline of North Temperate forests, in the context of global deforestation, and proposing an array of solutions, including Tree Bank.

8) Purchase of a computer system for desk-top publishing, maintenance of mailing lists, and maintenance of data relevant to business and ecological information required for Tree Bank operation.

Both Tree Bank and FooF are projects of FERN, which communicates through the newsletter *Robin*, which it shares with the SOLUTIONS Network [see address below]. *Robin*'s circulation is only about 125 at the moment, about 80% in the US. A much more complete discussion of Tree Bank is published in *Robin*, Volume V, available for \$16.50 ppd in the US and Mexico and \$18.00 elsewhere, US funds only.

We need volunteers with a wide variety of skills and inclinations. To volunteer, contact me, Dan Hemenway, Editor, *The International Permaculture Species Yearbook*, PO Box 16683, Wichita, KS 67216 USA. This is also the address for *Robin*.

Dan Hemenway publishes and co-edits, with Cynthia Baxter, *The International Permaculture Species Yearbook* (TIPSY) as well as *Robin*, newsletter for the Forest Ecosystem Rescue Network (FERN) and the SOLUTIONS Network. They are available to lead workshops for groups seeking to organize Fate of our Forests action, lectures on the forest issue, and lectures, workshops and full design courses about permaculture. They are currently seeking contributions of land and buildings to establish a center for such work, including advanced training for organizers and teachers.

Editor's note: This article was reprinted from *Catalyst* magazine with the author's permission. From our latest information (January, 1989) the New Zealand group coordinating the Tree Bank is the NZTCA / HWIG (New Zealand Tree Crops Association - Hardwood Woodland Investigation Group).

NZTCA / HWIG
c/o G. Atkinson,
212 James St.,
Whakatane, New Zealand

or...

Judy Whatley
Morley Rd
RD 1
Waiuku, New Zealand

Plant Profile: Jerusalem Artichoke

Daniel S. Howell

Since its discovery by Europeans in the 16th century, this member of the Sunflower family (Compositae, or Asteraceae) has been on a roller coaster, going through highs and lows in popularity. *Helianthus tuberosus*, sometimes called sunroot or sunchoke, was cultivated by native Americans in the Ohio River Valley and the Northeast. This plant's origins and chromosome count has led to speculation that it was an intentional hybrid created by native peoples in the not too distant past. Whatever the case, the Jerusalem Artichoke is once again regaining a prominent position in its usefulness to man [sic], especially when applied as an element of a thoughtfully designed permaculture system.

At our desert homestead, we have grown them for a decade wholly on runoff water without benefit of supplemental water. Their yield can be quite prolific, at times 15 tons to the acre², but more typically 3 to 5 times what can be expected from potatoes. The highest yields are from rich soil but *H. tuberosus* plant is very tough when compared to most cultivated vegetables.³

We plant the tubers in fall, 4 to 6 inches deep in established terraces or swales. By established, I mean that at least one seasons' moisture has been allowed to accumulate. Their growth starts early in the spring (March/April) and can reach 3 meters under runoff farming conditions, though 1-2 meters would be considered normal.²

Being a perennial, *H. tuberosus* dies back to the tubers but the dried tops remain. This tall growth can be used to advantage to shield other elements and collect snow drifts in the winter.

In dryland settings such luxuriant growth is a real boon. Not only can it be utilized for livestock and poultry feed (relished by goats) it is a source of mulching and compost material. The tubers are completely frost hardy and well suited to cool climates (Montane deserts included). We store them over winter in the ground where grown and

harvest them as needed from October thru March. Any additional amounts can be stored in your root cellar under cool, moist conditions for up to 2 months. Twenty five feet of row is adequate for the average family.

In the past, it has been used as a commercial source of fructose¹, indeed one of its attributes is that it stores its sugars in the form of Inulin, a polymer of fructose. Inulin, unlike glucose containing carbohydrates, can be metabolized by diabetics.⁴ They are 100% starchless and practically calorie free and are a good source of potassium and thiamine.² They can be eaten boiled, pickled, or raw. One of our favorite ways is to add it to coleslaw.

Of additional interest is the alcohol fuel potential. These figures are from the USDA and are over a decade old and are very conservative. The use of new enzyme technology could produce significantly higher yields.

Lbs/bushel	60
Fermentable content	15.2%
Alcohol yield	
gallon/bushel	0.6
Tons/acre	9
Gallons/ton	20
Gallons/acre	180
Residual Solids	104 lb/ton ⁵

H. tuberosus is recommended for USDA climate zones II thru V. It is low maintenance and easily propagated, in fact so easily propagated it can escape cultivation to become a troublesome weed. Plants are free from disease and have been used to create many resistant Sunflower hybrids. Utilization of *H. tuberosus* as a pioneer in system establishment is a step toward a permaculture future.

Daniel S. Howell
Box 74
Datil, NM 87821

Bibliography

1. The Sunflower, Claude B. Heiser Jr., University of Oklahoma Press, 1976;
2. Encyclopedia of Organic Gardening, J.I. Rodale;
3. Permaculture I, Bill Mollison and David Holmgren, Tagari Press, 1979;
4. Plant Science, Janick Scherry, Rattan, Wood, W.H. Freeman and Co.;
5. Solar Alcohol, Michael Wells Mandeville, AMBIX, 1979.

Skipping Stones

A multi-ethnic children's forum

Skipping Stones is a non-profit, multi-ethnic, children's magazine which celebrates cultural and linguistic diversity and an appreciation of the ecological web that sustains us.

Printed on recycled paper. *Skipping Stones* features stories, poems, artwork, photographs, book reviews, requests for pen pals, news and educational material for and about children around the world. Most of the material is contributed by children, or by adults old enough to understand them.

Skipping Stones is primarily a place for children of diverse backgrounds to share their particular experiences and expressions. Its goal is to reach children around the world, in economically disadvantaged as well as privileged families. The Tree Poems have been reprinted with permission from *Skipping Stones*, Vol I, No 1, 2 & 4.

Subscription cost is \$15/year. Editor:
Arun Narayan Toké.
Skipping Stones
80574 Hazelton Rd.,
Cottage Grove, OR 97424

A tree is a giant mop,
and on the very top,
it mops the sky so blue,
and makes it pretty for me and you!

A tree is like a big spider, upside-down
and turned around.
And when the wind blows very hard,
it tries to get right-side-up,
but it never gets quite that far and always
gets upset!

A tree is like a serpent,
out of a green grass sea,
and no one can stand up to it,
not even you and me!

-Shannon Marie Fishwick
3rd grade, Edison School,
Eugene Oregon.

Solar Disinfection of Water

David Bainbridge

One of the most critical health problems in the developing world is safe drinking water. The World Health Organization estimates that more than 80% of human disease and illness in the world is due to contaminated water supplies, poor hygiene from lack of safe water for washing, or environmental conditions that support water borne diseases. An estimated 25 million people, mostly children, die from these diseases each year.

There is no simple solution for these problems. However, a little known but promising water treatment process known as solar disinfection has enormous potential for helping to provide safe drinking water. It is economical,

requires no exotic or expensive chemicals, and does not require expensive and limited fuels for boiling. Instead, solar disinfection utilizes the near ultra-violet radiation of the sun, 300-400 nm wavelength, to kill pathogens.

Water should be prefiltered (sand filter) or allowed to settle, if it is cloudy. It is then placed in a thin-walled vertical transparent container, preferably plastic, which transmits a high percentage of this wavelength radiation, but clear glass will also work. This container is then placed in the full sun for several hours. Limited studies on the effectiveness of this treatment showed complete destruction of *Salmonella enteritidis* and *S. typhi* in 60 minutes, *S. flexneri* in just 15 minutes, *Escherichia coli* in 75 minutes, and comparable results against a number of other pathogens.

Further research is urgently needed on the effectiveness of solar disinfection against viruses, giardia, and other common pathogens. An evaluation of possible added benefits from including small amounts of tea (sun tea); creosote bush, (*Larrea*, a traditional medicine and apparent amebicide); mesquite; *Prosopis* spp., which also has apparent germicidal properties and is still used as a summer drink in Northern Mexico; or *Artemisia* spp., which were used for digestive disorders by the Hopi, would be of particular value. If these local resources can be used to provide disinfection comparable to chlorination, as I suspect they might, the benefits would be enormous.

Further reading;

Acra, A., Karahagopian, Y., Raffoul, Z., and Dajani, R. 1984. Solar disinfection of drinking water and oral rehydration solutions. American University of Beirut for UNICEF. 56p.

Ayob, J. 1986. Use of solar radiation for water disinfection, Brace Research Institute report F.36. McGill University, Quebec, Canada. 13p.

Bell, W.H. and Castelter, E.F. 1937. Uses as medicine. In the utilization of mesquite and screwbean by the aborigines in the American Southwest. Univ. of New Mexico Bulletin 5(2):1-55.

Segura, J.J. and Calzada Flores, C.C. 1981. Possible amebicidal activity of *Larrea*. In *Larrea*, ed. by Lopez, E.C., Mabry, T.J., and Tavizon, S.F., CoNaCyT, Mexico, pp. 317-326.

Whiting, A.F. 1966(1939). Ethnobotany of the Hopi, Museum of Northern Arizona, Flagstaff. AZ. 120p.

This process is also effective on solid foods. The food, such as bread, is covered with a clear plastic lid and placed in the full sun for about an hour. The *tabag*, as it is known in the Sudan, has been found to kill most intestinal bacteria and could help protect pilgrims and large crowds at religious gatherings.

El Agil, A.A.R. and Erwa, H.H. 1974. Decontamination of foodstuffs by solar energy: bacterial counts in food samples following exposure to sunlight in airtight containers. IRCS 2, 1270.

Tree Poems

Ballerina Tree

A tree's branches look like arms when the blowing wind makes them sway from side to side and its bark is as dark as a forest fire going up in smoke and makes the sky brown. A tree's roots are as stable as the statue of Liberty and it is as strong as a greyhound's legs. The wood that stays lonesome under the bark and on top of the roots is as hard as a rock but when fall comes all of the leaves fall off and get as crisp as burnt toast and some of the trees get at least one hundred years old and that seems nice to us but really this is what most trees are like.

Blake Pengelly, 4th grade
Edison School, Eugene, OR

I think the tree looks like a ballerina with her leg out and her arms up in a graceful position. In a fiery, colorful, red skirt of leaves, she moves as the wind blows her around in a twirl. Her skirt has the smell of candy apples and syrup. Another rustle, her performance is over. It is winter. Fall is over. But she awaits the spring breeze.

Rachel Flourny, 10,
Woodbridge, VA.

The wind blows softly
in the state of Hawaii,
over the tree leaves.

Victor, 9,
Doland, South Dakota

Report from the First North American Permaculture Conference

David Jacke

Held in Santa Fe, New Mexico in early November, the conference brought together 15-20 permaculture activists from a many areas of the continent. The participants discussed a range of topics, including the regeneration of the dormant continental permaculture organization (i.e., PINA), communications, education, global issues and the "internal health" of the permaculture movement and organizations. This report will cover the main topic of conversation, permaculture organization, while the other aspects of the discussion will be presented in other articles in *The Permaculture Activist*.

The group rapidly agreed that there was a need for a continental permaculture organization. The challenge was getting the diverse assemblage to decide on the goals and structure such an organization would take.

We spent most of the three and a half days wrangling with a variety of issues around organizational structure and function, including the apparent conflict between small working group effectiveness and the need for representation of members in decisionmaking on certain issues; the need to organize ourselves in a way that is not based on dominance and hierarchy of power; ways to build an organization which fosters individual initiative and inclusiveness rather than motivation from "above" and exclusion of people from the process; whether the organization should serve the public, individual permaculture folks or just regional permaculture institutes; etc. The group's commitment to raising and discussing these issues generated both fascination and frustration among the participants, as well as a large number of proposals for what to do and how to do it.

What is presented below constitutes the status of the new organization, now called North American Permaculture (NAP), at the present time. NAP is in a fluid, formative stage, and is intended to meet the needs of the permaculture movement. Proceedings of the 1989 conference are in process, and as soon as they are reviewed by participants and go through their final editing, will be made available to the public. In the meantime, we encourage all to participate in the development of the organization by sending comments to the Council members listed below or volunteering for one of the teams.

There are many functions that the permaculture movement needs fulfilled in order to grow, spread and have an impact on our unbalanced culture. Conference participants brainstormed a list of over 30 and categorized them in two ways: those that are best done on a continental basis vs. those that are best done regionally, and; those that are service functions vs. those that are more self-governance functions and require representation.

The continental service functions can be accomplished either at a central office by the continental organization or, preferably, can be spun off to activists around the continent as livelihoods. However, many of these "livelihoods" may not be possible at this time due to limitations in the size of the "market" for permaculture services. Therefore, it seems clear that one of the roles of the continental organization is to help "break the ice" in developing the market for permaculture services by doing some market research, developing PR materials and getting them out to the public as well as to permaculturists for their own use, and by facilitating and improving regional efforts at education and professional development of designers. By developing the market for permaculture services in our continent, we can start to make permaculture livelihoods, which will get a big ball rolling as we begin to pass our money and energy around sustainable systems.

Other important roles include building a communications network so that we can quickly and easily share the information needed to do the work; maintaining and developing a sense of ethics and helping us to see our own behaviors in light of their effects on sustainable human relationships; organizing annual or biannual conferences for permaculture activists and others to learn and improve on new skills as well as guide the organization; and raising and initiating a coordinated permacultural response to issues around our global interconnections. Generally, the intent is to serve the initiators of permaculture, the grassroots, in a wide variety of ways.

The structure being set up to deal with these needs is intended to be composed of small working groups to facilitate effective decisionmaking and action, while being open to evolution and participation. Anyone will be able to be a member of North American Permaculture, design course graduate or not, which will entitle them to various services at a discount, such as database access and conference fees. However, dues paying design course graduates will constitute the North American Permaculture Congress, who will have the responsibility to empower individuals and groups to take on tasks and to ratify policy proposals of the NAP Council, and the right to participate in the organization more fully by becoming a team or Council member. The NAP Council is composed of PDC grads, each the coordinator of a team (Conference Planning, Global Interconnections, Education, Communications, etc) or an officer of the organization (Secretary, Treasurer). The Director of the home office also holds the title of President for legal purposes, and is a member of the Council.

The Director, Jean Eisenhower, is at this time planning for the NAP home office for the coming year, evaluating various services to see which can pay for themselves. In the meantime, we are planning on having another conference next year in the late fall or early winter which will be a major educational and organizational (as well as fun) event, and the other teams of NAP are getting geared up to do the work they've taken on. Nailing down the structure and functions of NAP will consume a fair amount of time and energy, and getting the organization jump-started will consume a fair amount of money, too. But the commitment, enthusiasm, and willingness to listen and work together demonstrated at the Santa Fe conference bodes well. The next year is a critical time for North American Permaculture, and we look forward to the support, participation and encouragement of permaculture activists around the continent.

North American Permaculture Council, as of November, 1989:

Director:

Jean Eisenhower
720 E. University, Tucson, AZ 85719
602-622-4512

Treasurer:

Patricia DuBose
Star Rt.4, Box 355, Blanco, TX 78606
512-833-4460, or;
8801 Scarlet Circle, Austin, TX 78707
512-288-6950

Secretary:

Bob Macoskey
238 Evans City Rd., Butler, PA 16001
412-287-4157

Global Interconnections team:

Cynthia Edwards
21300 Heathcote Rd., Freeland, MD 21053
301-343-0280

Conference Planning team:

Dave Jacke,
9 Old County Rd., Jaffrey, NH 03452
603-532-6877

Communications team:

Michael Pilarski
PO Box 185, Port Townsend, WA 98368
206-385-9288

Education team:

Scott Pittman,
PO Box 1812, Santa Fe, NM 87501
505-982-2063

Internal Health team:

Susan Mullen,
Box 218, Gila, NM 88038
505-535-4352

North American Permaculture - Communications Committee

Report of meeting held at Camp Stoney, Santa Fe, November 3, 1989.

Michael Pilarski

The organization "North American Permaculture" (NAP) was formed during the weekend of November 3-5, 1989. Communications was an important topic, thus a communications committee [referred to as the PCC in this article] was formed, with initial members including Michael Pilarski, Eric Anderson and Larry Santoyo. All permaculturists are invited to cooperate.

The PCC aims to put together a report in each issue of *The Permaculture Activist*. Pertinent letters, reviews, and articles are invited. Starting in the Spring, '90 issue we will list Modem and FAX numbers of anyone who requests to be listed. Please send copies of submissions to *The Permaculture Activist* and to Permaculture Communications Committee, c/o Michael Pilarski, PO Box 185, Port Townsend, WA 98368.

Public outreach.

The PCC would like to establish subcommittees to reach special interest groups. These special interest committees would concentrate efforts on getting publicity for permaculture within the journals of groups in the environmental movement, development agencies, NGO's, trade organisations, urban planners, landscape architects, organic agriculture, mainstream agriculture, etc. If you can help reach any of these groups, or others, please contact us.

Printed media

The Permaculture Activist and the *International Permaculture Journal* (IPJ) are the primary vehicles of printed communication for NAP. Along with various regional periodicals such as the *Sonoran Drylands Journal*, Permaculturists are encouraged to send articles, artwork, photos, reports, letters to the editor, reviews, jokes and suchlike to the IPJ and the Activist. Robyn Francis, editor of IPJ, writes that she would like to have more material from North America in the IPJ but we haven't been sending her much. Send articles directly to IPJ, 113 Enmore Road, Enmore, NSW 2042, Australia; or to the IPJ's U.S. editorial representative, Patricia DuBose, Star Rt 4, Box 355, Blanco, Texas 78707.

Brochures

The permaculture movement could use more introductory and educational brochures/hand-outs which would be mass produced and made available for a nominal fee. This service could be performed by NAP's national office, or the PCC, or a private person. Anyone interested in producing such flyers or coordinating this activity can contact the Communications committee address.

Article depot

We would like to see an individual or group serve as a center for compiling permaculture articles. A catalog of articles could be published and updated periodically and would list title, author, date of publication, # of pages, and a short abstract. The center could sell copies of articles to meet operating costs. Anyone interested in administering such a program?

Audio-visual depot

A similar service to provide audio tapes, slide shows, videos and movies on permaculture and related fields. There is a lot of educational material but it is hard to find. We could benefit from a center which compiles and makes available as much of this material as possible from around the world. Rentals and sales of materials would be a source of income. Anyone interested in this?

Slide depot

Permaculturists are encouraged to duplicate their best slide shows, write texts, and make copies available for rent and/or sale. A slide depot could facilitate and coordinate advertising and distribution of slide shows. It could also compile slides from many sources into shows on hundreds of subjects, such as plant species, erosion-control techniques, horticulture, livestock, water plants, trees, architecture, swale & pond building, etc.

A permaculture slide depot has been started in Australia. For information contact Steve Payne c/o the IPJ address. Is any individual or group interested in setting up a slide duplication and dissemination service for North America?

Other needs:

Video Production.

Video offers one of the methods for reaching large numbers of people. One tact is for permaculturists to produce the videos themselves. Another tact is to get network stations to produce them. We need people with video production skills, as well as people with contacts in the entertainment/media industry.

Radio.

How to get permaculture more on the airwaves? Get yourself interviewed on local radio talk shows. Many radio stations are open to this, especially community or University stations.

Newspapers.

Send letters to the editor. Many local newspapers would love a regular gardening column. Permaculture could be included easily in such a format.

Bookstores.

Ask your local bookstores to carry permaculture books and periodicals. Tell them where they can obtain them.

Micro-computers.

There are several hundred permaculturists who own micro computers. How can we facilitate communications by having compatible equipment while bearing in mind the benefits of diversity. Standardization to some extent does have advantages and we wish to explore them, realizing that we are dealing with a diverse group of people with different job needs and different levels of funds.

Some considerations when choosing equipment are: price, user-friendliness, serviceability, availability of training, and quality. When sending reviews of equipment please address the pros and cons of these various factors.

Apple

More permaculturists have Apple computers, mainly Macintosh, than any other. So we encourage Apple equipment for compatibility. Apple is one of the higher priced machines, but it has good capabilities, is user-friendly, is one good for graphics capabilities, plus the Apple Corp. has a good record of social responsibility.

There are a number of Macintosh computers available; ranging from \$2,000 up to \$7,000. Discounts of up to 40% can be gotten a variety of ways. (1) University students; (2) In Fall, 1989 Apple started a program to supply equipment to non-profits at wholesale prices. (3) There are mail-order companies which offer significant discounts. (4) Computer or software developers can get up to 70% discount. Future reports will follow up in more detail, so send relevant information.

Permaculturists who presently own Macintoshes include: Michael Pilarski (Friends of the Trees Society), Larry Santoyo (Great Northwest Permaculture Institute), Guy Baldwin (Permaculture Communications), Scott Pittman, New Alchemy Institute, Rick Valley (Northern Groves Bamboo Nursery), Paul Gallimore (Long Branch Environmental Center), Jude Hobbs, David Jacke (Gap Mountain Permaculture), Sego Jackson, Carl Woestendieck. Who else? In Australia, the Permaculture Institute and the IPJ staff use MacIntoshes.

Apple Grant.

Scott Pittman, Director of Southwest Regional Permaculture Institute in Santa Fe, is preparing a grant to the Apple Corp. for Apple computer equipment to set up a permaculture computer network. Scott is asking for 16 computers for the network, and is still seeking nominations (both within and outside the U.S.) to be included in the proposal. For further information contact Scott at 142 Lincoln Ave, Suite 818, Santa Fe, NM 87501, (505) 982-2063.

IBM

There are many brands of IBM compatible home computers. Exchanging information between Apples and IBMs has been difficult in the past, but the technology and prices are improving. Information can be sent between different types of computers via modems.

Modems

Modems allow computer users to send information from their computer to other modems via the phone lines. We plan on setting up a NAP electronic-mail service which would enable us to send files, documents and programs. Modems cost approx. \$200 and you have to pay for phone time. However computers can exchange information via modems at a fast rate of speed and only long documents take more than a few minutes. Information can even be sent overseas. Some computer modem networks save up overseas messages till nighttime cheaper rates and bounce a whole package of them via satellite to other parts of the world.

continued, pg 24...

The Fourth International Permaculture Conference (IPC 4) Theme: "Developing a Sustainable World"

February 10 - 15, 1991
Kathmandu, Nepal

History and Goals of IPC 4

At the IPC 3 in New Zealand, Jan. 1989, Nepal was chosen as the site for IPC 4. It will be hosted by the Institute for Sustainable Agriculture (INSAN), Badri Dahal, Director, and organized by a global committee in which everyone is invited to participate.

By holding this conference in Nepal, we consciously shift our focus to "Developing Third World" countries. We draw attention to permaculture as a "development tool," we refocus development in the context of permaculture as it applies to Third World countries. We draw attention to the fact that developing countries are currently facing a food crisis and major environmental degradation which together are having a severe impact on the Earth's total environment. These same crises are occurring within the so-called First World as well. Our intent is to make the same connections between the two and to offer permaculture systems which are economically, socially, and environmentally sustainable.

This conference has the potential to be of great importance to Nepal and to the development of permaculture in the Third World. If all goes well the conference will be opened by the King of Nepal. It will also be attended by representatives from both government and NGO aid agencies from around the globe.

North American coordinating effort

With the theme "Developing a Sustainable World", we offer the vision and practice of permaculture design to governments, aid agencies, nonprofit organizations as well as grass roots workers and individuals globally.

Implementing the vision has never been needed more, no matter where you live or who you are.

We encourage North American permaculture people to find out about our part in the organizing effort and how you can personally contribute, even if you don't attend.

Help is especially needed with: fundraising, publicity and press liaison, designing the "official" brochure, the children's conference, and the scholarship fund.

If you think an International Permaculture Conference doesn't relate to your life or the work you do, think again! As Americans, we are all responsible for our national misuse of resources and the resulting impact on developing countries. This conference is a challenge and opportunity to address what has gone before us through offering positive and practical solutions. It is time to take our place among the leaders in world change on a very visible level.

To date the IPC IV Coordinating Group organizers include: Michael Pilarski, WA; Sue Colpas Ross, TN; Cynthia Edwards, MD; Larry Santoyo, WA; Simon Henderson, WA; Patricia DuBose, TX; Rosemarie, WA.

We invite you to join the planning for the event of 1991, "Developing a Sustainable World". For information pack on how to get involved contact:

Cynthia Edwards,
21300 Heathcote Road,
Freeland, MD 21053.
Phone: (301) 343-0280,
Fax: (717) 235-6798, Econet: rpollard

Travel arrangements for IPC 4

can be made through Great Northwest Permaculture Institute. For group travel discounts contact:

Larry Santoyo
Great Northwest Permaculture Institute
2073 Marble Valley-Basin Road
Addy, WA 99101
(509) 935-4578

Hosted by: the Institute for Sustainable
Agriculture Nepal (INSAN)

GPO Box 3033, Kathmandu, Nepal. Ph: (977) (01) 220448; Fax: (977) (01) 524509; Cable: INSAN; Telex: 2439 ICIMOD NP.

Permaculture Conference

The aim of the conference is to provide a forum for discussion on and action by permaculture in cooperation with the policy makers, planners, aid workers, press and members of the public who will be attending.

People from all over the world who are involved in sustainable agriculture systems and research, development organizations and policy and other related fields will be invited as guest speakers. They will be speaking on a variety of topics including:

- Sustainable farm systems;
- Energy efficient housing;
- Ecologically sound village and urban design;
- Cooperative economic systems that foster community self-reliance;
- New directions for aid projects.

Time: Opening ceremony - 10 AM February 10, 1991

Closing function, Feb. 15.

Cost: (includes lunch, morning and afternoon tea) - rates in US \$;

• Paid before 1/8/90	\$240
• paid between 1/8/90 and 1/2/91	\$270
• paid after 1/2/91	\$300

To Register: The best method to send money is by telegraphic transfer to INSAN's current account No. 30056 Nepal Bank Ltd., Kathmandu. Please mail a copy of the bank slip to INSAN's office with your registration form. Accommodation is available at a variety of local hotels at rates from \$5/night to \$35 or more/night.

Permaculture Designer's Convergence

Immediately preceding the International Permaculture Conference, the convergence is an informal gathering where permaculture design course graduates can exchange and update information and decide organizational policy. People who are not design course graduates are welcome as observers only.

Time: Starting 9 AM on Feb. 2, 1991, Closing, Weds. evening Feb. 6.

Place: The Permaculture Demonstration Farm near Biratnagar, Nepal in the sub-tropical eastern Terai, 450 km east of Kathmandu. The farm has recently been purchased by INSAN and any profits from the conference will aid in the development of the farm. There will be an opportunity to join in on-site tree planting and to have design input. We hope the convergence will foster understanding and appreciation of Nepali village life.

Accommodation: will be on-site in simple but comfortable buildings made from traditional local materials. The food will be grown mainly on site. As there is no electricity in this area, power for audio visual equipment will be supplied by generators.

Cost: (including food and accommodation)

• Paid before 1/8/90	\$240
• paid between 1/8/90 and 1/2/91	\$270
• paid after 1/2/91	\$300

Transport: from Kathmandu to the convergence site near Biratnagar

Chitwan Bus Tour	\$145 approx.
Direct Bus Travel	\$10 each way
Plane	\$85 each way

Chitwan Bus Tour (29th January - 1st February) is an opportunity for convergence participants to visit three local farms in Chitwan district, as well as a visit to Royal Chitwan National Park, famed for wildlife such as the Bengal Tiger and the one-horned rhinoceros. This tour is limited to the first 40 people who register for it.

● Permaculture Design Courses - Nepal

Pre-Conference Design Course: January 13 - 25, Kathmandu

Post-Conference Design Course: February 21 - March 7, Kathmandu

A Call for Papers, Lectures, Slide shows, Workshops, Trade Shows, Demonstrations, Network- ing Proposals, Discussion Topics & Suggestions

Dear Friends:

Principal among the preparations for IPC 4 is identifying and locating qualified individuals to make relevant presentations at the conference. Two principle objectives of the conference are to provide an opportunity to illustrate the need for change in current farming practice and, secondly, to demonstrate how permaculture is a means to a sustainable future. INSAN is actively seeking individuals worldwide with the ability and desire to present direct, accurate data that will address the objectives outlined above. We are searching for individuals involved in permaculture practice to share their knowledge and experience about the relevancy, indeed urgency of permaculture for a stable environment and society. Examples of sound comparative research on permaculture and monoculture practice is also desired.

There are many people who are aware of the major problems surfacing on the globe but don't yet understand the implications, nor how to avoid them. IPC 4 will bring together people who have made their enquiries into the ethics, standards and direction of humanity and begun their quest to bring about positive change.

Where are *You*? How are *You* doing? What have you got to offer in the way of proof and method, and, assuming that there are lots of people out there who would benefit from knowing about what you do and how you do it (about 5 billion), what can you put on show at IPC4 in February 1991. If you have papers, lectures, slide shows, workshops, trade shows (appropriate technology, book sales, seed displays, etc.), demonstrations, networking proposals, discussion topics or just suggestions and ideas you think have a place in IPC 4, contact INSAN so we can coordinate the whole scene in a structured, cooperatively presented conference-with-a-difference.

Looking forward to hearing from you.
For the Earth,

Badri Nath Dahal
Coordinator IPC4

IPC 4 Conference/Convergence - Registration Form

I will be attending the conference only ☐ ☐
I will attend both conference and convergence ☐ ☐

Dietary Preferences: Vegetarian ☐ ☐
Non-vegetarian ☐ ☐

Do you wish to have hotel bookings arranged by INSAN? Yes/No
If yes, please indicate date(s):

From To
From To
From To

also indicate hotel preferences:

Basic Guesthouse (room & common bath) \$ 5-10 per night ☐ ☐
Basic Hotel Room (room & attached bath) \$ 10-15 per night ☐ ☐
Medium Priced Hotel \$ 15-25 per night ☐ ☐
Luxury Hotel \$ 35 plus per night ☐ ☐

For Designers' Convergence Participants only:

Travel to convergence site via Chitwan Bus Tour ☐ ☐
Direct bus travel to convergence site ☐ ☐
Direct flight to convergence site ☐ ☐

Amount of money enclosed (in U.S. dollars):

Conference Registration	\$
Designers' Convergence Registration	\$
Travel to Biratnagar:	
Chitwan Bus Tour	\$
Direct Bus Travel	\$
Direct Flight	\$
Permaculture Design Course 13 - 25 JAN	\$
Permaculture Design Course 21 FEB - 7 MAR	\$

Total amount enclosed	\$

A Note from IPC IV Organizers: There will be a limited amount of money available for direct mail promotion for IPC IV. Please photocopy or reprint these pages and distribute the information to as many people as possible. Thank you for your help!

Reports from Regional Groups

Editor's note: Each issue of The Permaculture Activist includes this regular column covering the growing number of permaculture groups and projects appearing all over North America. We ask that anyone with news and events to report please contact: Editor, The Permaculture Activist, P.O. Box 101, Davis, CA 95617. Deadline for the next issue is April 1, 1990.

Friends of the Trees has moved!

Friends of the Trees
PO Box 185
Port Townsend, Washington 98368
Phone: (206) 382-9288 Fax: (206) 382-9288

Friends of the Trees' next publication will be *A Tree's Eye View of New Zealand*: A directory concerning conservation, reforestation, forestry, horticulture, and agriculture in New Zealand. February, 1990. Cost: \$5.95

TERN - Traveler's Earth Repair Network

TERN is a networking service for overseas travelers concerned with reforestation, forest preservation, erosion control, horticulture, tree crops, agroforestry, permaculture, sustainable agriculture and other areas of tree work. TERN has the potential to do an enormous amount of work towards reforesting the Earth, promoting sustainable agriculture and creating friendships between countries. The time is ripe and the need is apparent!

Progress is being made toward getting TERN off the ground. Inquiries are piling up and we now have brochures prepared as well as application forms for travelers and hosts. Let us know if you are interested in receiving further information. To make TERN operational we need an Apple MacIntosh IIx computer, computer programming help and funds to pay for data entry.

Can you help TERN get off the ground and flying? Contact TERN at the above address for Friends of the Trees.



Sonoran Permaculture Association (SPA) &

the Southwest Regional Permaculture Institute

Sustainable Living in Drylands is now produced jointly by the Institute and Sonoran Permaculture Association (SPA). The scope of this newsletter has broadened, and we are now addressing drylands everywhere.

Yearly membership includes a year's subscription to *Sustainable Living in Drylands* and a 10% discount on courses and publications offered by the Institute. For those of you who want the newsletter only, that option is available as well. We urge you to consider supporting the Institute financially, if you are not already doing so.

To offer your services or to communicate with the SRPI office in Santa Fe, contact: Southwest Regional Permaculture Inst. P.O. Box 1812, Santa Fe, NM 87504-1812 (505) 982-2063.

Please note that memberships and subscriptions are processed through our Tucson address. Subscribers within the Sonoran bioregion will continue to receive information on local actions and events, courtesy of SPA, as funds and energy allow. To volunteer for local projects, please contact:

Esther Moore, c/o SPA,
P.O. Box 27371,
Tucson, Arizona 85726-7371.

We would like to hear from other permaculture associations and individuals dealing with drylands issues. Send articles and letters to: Jean Eisenhower, c/o SPA, P.O. Box 27371, Tucson, Arizona 85719.

Maui Epicenter

Membership privileges include: subscription to the quarterly Newsletter; subscription to The Environmental Directory; discounts on Epicenter events, lecture series, and workshops; periodic mailings of up-to-date information on environmental issues for Maui; access to global networks of information and resources on environmental issues, from philosophical treatises to hands-on techniques; involvement in educational efforts to change the way Maui relates to her environment.

Membership Dues: Founding Member—\$1000; Charter Member (accepted throughout 1989)—\$500; Sustaining—\$200; Corporate—\$100; Organization—\$50; Family—\$35; Individual—\$20. Make check payable to Maui Epicenter & mail to:

Maui Epicenter,
P.O. Box 400,
Kihei, HI 96753; ph. (808) 874-8172.

Epicenter Hawaii

"Epicenter" is an acronym for Earthbank/Permaculture Information Center, which is also used in Australia. The Earthbank Association is a nonprofit organization that publishes the "Earthbank Guide to Sustainable Economics", and Epicenter Hawaii is a newly emerging, loosely strung lei of individuals and organizations interested in the application of permaculture principles in the fascinating, unique, and diverse bioregion of the Hawaiian Islands.

Epicenter Hawaii provides educational materials and a public slide show and is hosting a permaculture design course in January, 1990.

For more information contact:
Epicenter Hawaii,
P.O. Box 1612,
Kealahou, Hawaii 96745.

Conceptual Permaculture Report for Crystal Waters Permaculture Village

(Lindegger, et al.) approx 90 pages, many photos, drawings, and maps. \$27.50 (post paid) [ed. note: the easiest way to send funds to Australia is by travelers check in US\$, so - send a \$10 check and a \$20 check and that should cover the additional postage]

This is possibly the most comprehensive Permaculture Report ever done for a property. It includes information and design input on enrichment, habitats, soil improvement, green manuring, pasture improvement, forestry, fencing, firebreaks, firewood, agroforestry, animal/plant integration, specific animals, dams, aquaculture, cash crops (with many suggestions), plus an extensive plant list.

For design approach alone, the Report will be invaluable for any serious designer.

Published by:
Nascimanere Pty. Limited,
56 Isabella Ave.
Narnbour 4560 Queensland, Australia

Permaculture Institute of Southern California

The Permaculture Institute of Southern California (PISC) is a multifaceted organization responsible for education, research, demonstrations, workshops, and urban/rural design strategies for sustainable living.

The work of the Institute covers a multidisciplinary science; an Earth-first ethic and personal behaviors that maintain a sustainable lifestyle. The factors that are included in this approach style are:

- 1) the stewarding of plants for biomass production, oxygen/CO₂ balance, water and air quality;
- 2) a concentrated nutrient cycling for soil fertility-composting, green water/sewage sludge/reclaimed water;
- 3) the use of climatically sensitive home construction and organic food production;
- 4) the creation of community and economic support systems that enhance local self-reliance;
- 5) Awareness of the energy use per person and the development of environmental energy management systems to care for the earth and to care for people.

The Permaculture Institute at Sprout Acres in Laguna Beach is a demonstration site, and is able to accommodate visitors on a scheduled basis. Tours are usually the first Saturday of the month, but call, check the schedule, and leave your address and phone number for information. Fee is \$10 for the tour, demonstration materials and ability to browse for lunch.

There are six autonomous yet interacting support groups that are part of the "Sustainable Permaculture Network" in Southern California:

Permaculture Demonstration Site
 Sprout Acres (urban/rural city interface)
 1027 Summit Way
 Laguna Beach, CA 93651
 contact Dr. Bill Roley: (714) 494-5843

Eco Home (urban demonstration site)
 4344 Russell Avenue
 Los Angeles, CA 90027
 contact Julie Russell: (213) 662-5207
 and get *Ecolutions*

Ecological Life Systems
 2923 East Spruce
 San Diego, CA 92104
 contact Jim Bell: (619) 498-4601

Cooperative Resource Center (CRISP)
 PO Box 27731
 Los Angeles, CA 90027
 contact Lois Arkin: (213) 738-1254

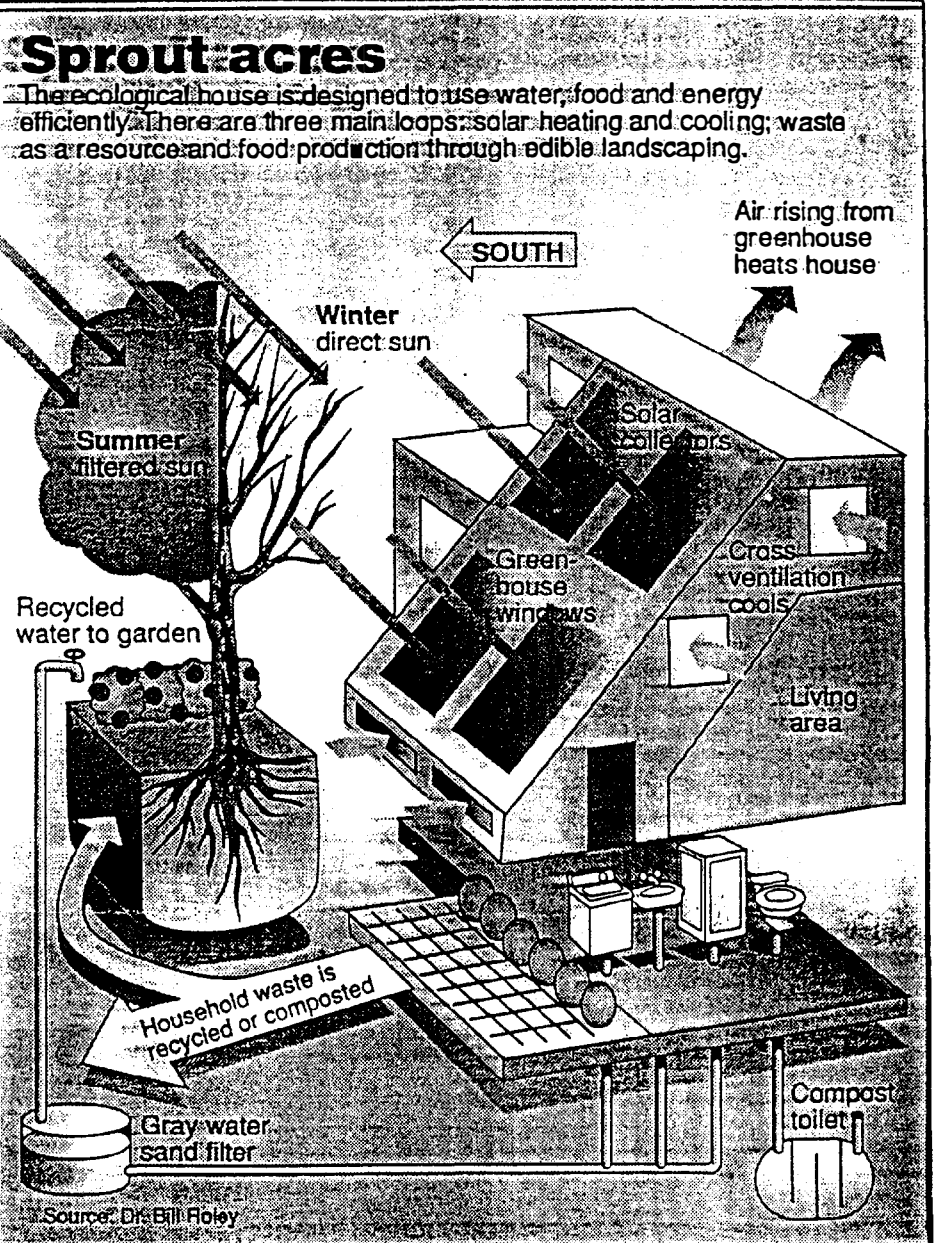
Gildea Resources Center
 930 Miramonte Dr.
 Santa Barbara, CA 93109
 contact Tony Domenskie: (805) 963-0583

Institute for Regenerative Studies
 California Polytechnic University
 3801 West Temple Avenue
 Pomona, CA 91768
 contact John Lyle

Northern Mexico Permaculture Institute

To contact the Northern Mexico Permaculture Institute, write to:
 José Valdéz Romero
 Rio Conchos,
 150 Col. Fuentes del Centenario,
 Hermosillo, Sonora,
 México

Translation of *Permaculture: A Designers' Manual* into Spanish is close to completion, with plans underway to publish a Spanish edition of *Sustainable Living in Drylands* (published by the Southwest Regional Permaculture Institute of Santa Fe, New Mexico).



Thomas Ward/The Register

Altertec - The Applied Permaculture Foci and Our Center in Pancá

Altertec has chosen to work in three different regions of Guatemala, each one having slightly different agricultural, climatic, and cultural characteristics. Each area constitutes a focus for our activities, leading us to develop a profound and lasting relationship with a few agricultural communities. Given the variety of conditions inherent to the three regions, we feel we are addressing needs shared by small farmers throughout the Guatemalan Altiplano. The sites for Altertec's educational and extension work are: 1) Momostenango and the area bordering on Pancá; 2) Santa Apolonia - Tecpán; and 3) Salamá - Rabinal. In each of these areas we try to work with small farmers who are in a position to pass knowledge on to others in their communities.

Altertec is in the process of founding a Center for Applied Permaculture (CEPA) in Pancá, a small village outside of Momostenango. The functions of CEPA as our base are 1) Education and Demonstration; 2) Administration; and 3) Research.

The development of CEPA as a demonstration and experimental farm provides us with tangible examples of the principles covered in our courses: compost piles, green manure crops, a wood conserving stove, a grey-water system, a medicinal herb garden, a composting latrine, a bread oven, and crop diversification including macadamia, coffee, neem, avocado, citrus, and mango.

Although the homebase of an institution will never be the exact model for a campesino's house, we hope to awaken ideas of how they might improve their own situation. There are always some farmers who already practice some of what Altertec teaches and they are themselves the best "models" for others in their community.

We have initiated work in Pancá with patience and certain reserve. Altertec's policy is that in any rural area it is of utmost importance to gain the trust of the people without establishing a paternalistic relationship based on gifts or economic advantage. Unfortunately, the contact that Pancá residents have had with formal institutions in the last few years, while limited, has deepened dependency on imported goods and encouraged the belief that the community's own resources and efforts are not sufficient to bring about a better way of life. Altertec is resolved in being the pioneer of a new relationship between community and institutions. Therefore, we have introduced ourselves first as new members of the community and only then as a possible source of information exchange.

For more information contact:

Altertec
Apartado Postal 2
Momostenango, Totonicapán
Guatemala

or:
PO Box 462
Solana Beach, CA 92075, USA

The Permaculture Edge:

A new periodical on permaculture

For thirteen years now Permaculture Nambour (Inc.) has produced first a newsletter and more recently a magazine "Living and Growing." Thanks to the various editors, contributors, and helpers, Permaculture Nambour has been able to communicate innovative ideas for many years.

Community awareness of environmental issues is growing and with it an increasing number of people are taking responsibility for a sustainable way of life and are looking for a model to follow.

Permaculture is at the edge of this change. Permaculture Nambour feels that the time is right to take our next step and early in the new year we will publish a new magazine, *The Permaculture Edge*, which will be distributed worldwide.

Its contents will deal with all issues a sustainable world has to be concerned with - from agriculture to town planning, from social to political issues. It will report on both successes and failures from around the world for the reader to learn from. It will provide a forum for ideas which are "at the edge."

The magazine will be aimed at permaculturists everywhere those looking to permaculture as a model to effect changes towards a sustainable lifestyle.

We invite you to participate in this exciting venture in several ways:

- as a contributor - by sharing some aspect of your experience and knowledge as a permaculturist
- as a subscriber and reader - feedback in the form of suggestions and letters to the editor will be welcomed
- as an advertiser - if you have a product or service you wish to advertise, consider that the *Permaculture Edge* will reach readers who are interested in a wide range of permaculture activities.

Advertising rates available on application. The magazine will be published four times a year on 100% recycled, unbleached paper.

Subscription: \$16 Aus/year. Overseas subscribers \$20 Aus/year, bank draft in \$Aus please. [editors note: an easy way to send funds to Australia is by US\$ travelers check. A US\$20 travelers check is worth slightly more than \$Aus 20, but then you save on the cost of buying a bank draft.] Published by:

Permaculture Nambour (Inc.)
PO Box 650
Nambour 4560 Queensland
AUSTRALIA

Permaculture Communications Committee Continued from pg. 19...

Modems come in 1200, 2400 and 9600 baud rates (the number of characters/numbers/symbols which can be transmitted in a given time period). Advice is that 1200 or 2400 baud would be the recommended speed for people to buy for compatibility within the permaculture communications system.

To run a modem from your computer a communications software program is needed such as Microphone, Macterminal, and Red Ryder.

We are seeking information about the merits of various brands of modems and software packages. What are the best choices for the various levels of funds available and capabilities desired?

FAX machines.

Not many of us really have a need for FAX machines, but for the dedicated net-worker it looks like they will become increasingly valuable. Information is sought as to the best models to buy for the various levels of pocketbook.

FAX-Modems

Fax-Modems combine both features in one machine. From your own computer you can FAX information to any other FAX machine (or any computer with modem) in the world via the phone lines (You pay the phone charges, but a lot of information can be relayed quickly). However, this machine does not accept physical pages, like regular FAX machines do. FAX-modems do not have printers so incoming messages must be printed on whatever printer you have. Apple sells a FAX-Modem which retails for approx. \$600. Another Mac-compatible modem is the Abaton FAX-Modem.

ECONET

PC'ers with computers and modems are encouraged to join EcoNet, an electronic communications network serving progressive groups around the United States. Through EcoNet you can not only link up with permaculturists, but also hundreds of other progressive groups in the environmental and other fields both here and abroad, such as Pegasus in Australia, Greenet in Europe and Webbnnet in Canada. The committee will be exploring ways to link up with appropriate communications networks around the world. The cost for joining EcoNet is a one-time \$10 sign-up fee and then a monthly minimum of \$10. Non-prime time use costs \$5/hr, and \$10 for prime-time. EcoNet, 3228 Sacramento St. San Francisco, CA 94115, (415) 923-0900. EcoNet already has an ongoing permaculture conference which can be reached using the call letters INT.Pernaculture.

Call to Action

The PCC is just starting out. A small seed which will hopefully grow into a mighty tree; a symbiotic web of cells working together for the good of the whole. You are invited to share in the circulation of resources, nutrients, energy and information which will flow through this tree. COMMUNICATE !!

Permaculture Communications Committee
c/o Michael Pilarski
PO Box 185, Port Townsend, WA 98368

1989 Eastern Permaculture Conference: The Momentum Keeps Building!

About 25 people attended the Fourth Annual Eastern North America Permaculture Conference, held October 6-9 at Twin Oaks Community in Louisa, Virginia. Participants came from a long sweep of the Eastern U.S., from Alabama, Tennessee, and South Carolina up to Massachusetts and New Hampshire, and points in between. It is significant that in addition to adding new people as conference attendees by heading south, the number of returning conference attendees is increasing, demonstrating the growing commitment of Easterners to building a network of mutual support and information sharing.

These conference objectives were all met in some fashion or another: to help spread the net farther south by holding the conference in a more southerly location; to share among ourselves some of the work we are doing, as a way of informing others of permacultural possibilities and honing our public presentation skills, and; to energize each other to continue our efforts to live and demonstrate permaculture by sharing our stories and consulting and discussing organizing needs and strategies, to name a few.

Workshops started off with Dave Jacke (NH) giving a slide presentation of the Gap Mtn. Permaculture "Mouldering" Toilet, so called because the decay process is more like forest litter mouldering (cool aerobic) than the hot aerobic process termed "composting". Dave also presented slides on constructed wetlands for municipal wastewater and acid coal mine seep treatment. Dave has designed such a system for home greywater.

Jo Clayson of NY provided us with an overview of the necessary aspects of effective Group Process and Facilitation. We all agreed that we'd like to have more skills in this area, and wanted more such workshops at future meetings.

Jean Loria (OH) told us about her work with mushrooms. She initiated with us an informal program to test Oyster mushrooms outdoors in permacultural ways by giving out some of her kits in return for us giving her back the results of our trials! Too bad you all missed it!

Adam Turtle of Tennessee talked about, and showed, bamboos and their many uses in permaculture. Adam has 81 varieties of bamboo (and many other species) with varying degrees of hardiness under trial at Nobody's Mountain, and he is willing to sell or barter plants.

Larry Smith (MD) talked about the 1990 Farm Bill (S. 970) and the Global Warming Prevention Act (HR 1078), now before Congress, as opportunities for implementing permaculture on a broad scale. These bills are heading the right way, and need our support and our input to be even more effective!

Sue Turtle (TN) and Cynthia Edwards (MD) showed slides of their travels in New Zealand and Australia, filling us in on IPC3, doings down under and plans for IPC4 in Nepal. Our global interconnections can energize and support us, rather than just be a way of exploiting each other!

A wide range of permaculture business was also discussed, including fundraising; the need for "dynamic ventures" to help create the abundance we need to do our work; discussion of certification and education issues, and whether and how our approach might need to differ from Australia's; building mutual support networks; communicating among ourselves (through the Activist!); bringing more people into the network; developing a peer review mechanism at future conferences to help us grow as designers.

An issue which was good, but difficult, to talk about was how to deal with the lack of involvement in permaculture of people of color and the "Third World" of our country. Hopefully, some preconceptions were broken for all of us around this topic. We agreed to work with these issues in a more deliberate fashion in the future.

Many participants left this conference with a palpable sense that we are working together, though we are in some ways separate; that the momentum of permaculture has gained a bit because of this gathering; and that we can all learn a lot from one another just by listening to each others' stories. Maybe most surprising was seeing that people can become so energized just by each others' commitment to healing the earth and willingness to share with others!

Position Available: Permaculture Organic Farm Manager

We need a permaculture organic farm manager for Jemez House Youth Ranch. The site has 100 acres, some water rights, greenhouse, and animals. Elevation 5,500', high desert climate, 12" rainfall. Several land zones from highway to the Rio Grande. Forty minute drive from Santa Fe, New Mexico.

Help develop and implement a Permaculture plan aimed at:

- self-sufficiency in food;
- cash income to supplement group home activities;
- occupation and a sense of accomplishment for the youngsters;
- regenerating the land;
- landscaping around our buildings;
- developing new market enterprises;
- using the greenhouse all winter;
- making Jemez House Permaculture demonstration area.

Salary \$10,000 plus benefits, full room and board. Possible cash incentive for high production. Jemez House an equal opportunity employer, is a group home for abused and troubled teenage boys. Send resumé to: Jemez House Youth Ranch, PO Box 178, Alcalde, NM 87511, tel. (505) 852-4264. We'd like references for education, work experience, and good moral character.

Great Northwest Permaculture Institute

Great Northwest Permaculture is a research and education institute, organized to assist in global efforts of earth repair and create responsible community development in the Northwest.

Environmental Design Education

We continue the tasks of introducing permaculture to landmanagers and educators in and around the Columbia River Bioregion. A workshop and Permaculture Design Course with Larry Santoyo, Simon Henderson, and Michael Pilarski are set for June. More introductory workshops and a continuing permaculture series are currently being scheduled.

Food Forestation Project

Through generous donations, we will again offer, for spring planting, a variety of "food forest" trees, shrubs and vines.

Eco-Travel

We are organizing itineraries for a study tour of Nepal and Thailand. Other destinations will include resource management projects in Mexico and Costa Rica.

Quarterly Newsletter:

Our newsletter "The Worksheet" is published as part of the bioregional journal "Columbiana Magazine".

Support Needed:

Financial support and volunteers are needed to assist our efforts. Membership and Institute information (including fee schedule for research and design consulting) is available upon request.

For additional information contact:

Larry Santoyo - Director
Great Northwest Permaculture
2073 Marble Valley-Basin Rd
Addy, WA 99101
(509) 935-4578

Mailing list services offered by Permaculture Communications

We've been compiling names of people, organizations, businesses and institutions involved in permaculture, sustainable agriculture, organic farming, tree crops, bioregionalism, and related fields for over 6 years. These lists are made available to suppliers of products, services, educational programs and publications useful to permaculture practitioners. Total listings - over 27,000 names, coded by interest area.

Perhaps you need a mailing list to advertise your product or service? Call us first and save some time putting together a good list. Past users of our lists include: Sonoma Antique Apple Nursery, The Edible Landscape Book, Bear Creek Nursery, Tagari Publications, AgAccess, OMNIS, and numerous permaculture design courses.

Cost: \$60-\$80/thousand names.

Permaculture Communications
PO Box 101, Davis, CA 95617
(916) 679-2729

Permaculture Educational Programs

In each issue of The Permaculture Activist, we print news of permaculture educational programs being offered around North America. We publish this information as a service to our readers, and to allow more people to participate in these programs. These programs are funded, organized and taught by independent regional groups and individuals involved in permaculture work. Publication here does not imply certification or endorsement by The Permaculture Activist. We encourage all groups to contact us with news of upcoming events.

One-month Permaculture Design Course at Gap Mountain Permaculture

Gap Mountain Permaculture will give a Permaculture Design Course from July 15 - August 11, 1990. This one month course will cover the core Design Course curriculum and more using classroom, interactive, hands on, and contemplative approaches.

Basic design skills such as plant identification, observation skills, topographic surveying, design graphics, designer/client interactions and design processes will be taught. Design teams will work on scales from homestead to small village, including design for retrofit, new construction and a potential cohousing development. There will be ample discussion of the implications of PC and sustainability for aspects of our culture such as agriculture, economics, social and gender issues, health care, housing, etc. Hands on projects may include: topographic mapping, ferrocement tank construction, orcharding, plant propagation, sheet mulch garden construction, and greywater marsh system construction. The contemplative aspects of permaculture are often ignored, and this course will give these inner aspects of the field their due. Time will be provided for participants to attend the Natural Organic Farmer's Association annual conference in Amherst, MA August 3-5, if they choose.

Gap Mountain Permaculture offers three homesteads in various stages of development as examples for study, with solar photovoltaics, composting privies and greywater system, alternative refrigeration, chicken forage system, orcharding, cold climate gardening, greenhouses, food storage, roof water collection, land trust structure, etc.

Teachers: Jo Clayson, Doug Clayton, Jude Gregory, and Dave Jacke, all Permaculture Design Course graduates, as well as others. The teaching team is structured to provide an excellent mix of skills, experiences, perspectives and information.

For more information and a registration form, call or write Dave Jacke, 9 Old County Rd., Jaffrey, NH 03452, (603) 532-6877, or Sharon Devine, 38 Boylston St., Jamaica Plain, MA 02130, (617) 524-7092.

Fees have not yet been set, but there will be a price break until May 1. The course is limited to 18 students, so register early!

Elfin Permaculture Teaching Schedule

June 11- July 2, 1990, Full Permaculture Design Course.

Location: St. Louis, Missouri.

Description: This very intensive course in the permaculture design process qualifies successful graduates as permaculture design trainees. Course content includes an overview of the states of the global environment, grounding in principles of natural design, classical landscape analysis, principles of transformation, alternative economics, bio-regionalism, urban permaculture, and a survey of appropriate technologies for provision of energy, water, nutrients, shelter, in sustainable, environmentally integrated designs. The course includes thousands of slide illustrations, daily question and feedback sessions, exercises in teaching permaculture, and organization of the class into teams which prepare components of a coordinated site design. This particular course will include sessions especially geared for school teachers. Open to all. A wide variety of backgrounds among participants is desired.

Reading list for workshops and the design course are available for \$1.00 plus SASE.

For more information:

Elfin Permaculture,
PO Box 16683,
Wichita KS 67216 USA

Permaculture Design Intensive in Texas

Permaculture Design Intensive, March 9-18, 1990, taught by Patricia DuBose (and special Guest Lecturers). Course will consist of lectures, videos, slides, projects on the land, creative design work, and Zone 0 processing. The price of the course is \$550 which includes room and board (several \$300 scholarships are available). \$100 non-refundable deposit is due February 15, 1990. Send deposit to Heartland Permaculture, 8801 Scarlet Circle, Austin, Texas 78737. (512) 288-6950

Patricia DuBose, M.F.A., Certified Permaculture Designer with professional teaching background in Art, Architectural Design, Landscaping, and Research. She has many years experience in agriculture, the human potential movement and bioregional organization.

Advanced Permaculture: Teaching and Design

This program includes one week of training on how to teach permaculture and one week of advanced instruction in permaculture design, including theory, technique and hands-on experience.

Instructors: Lea Harrison and Max Lindegger have each influenced the introduction of permaculture principles around the world and have developed keen insights to the evolution of the "Permaculture Movement". Don't miss this opportunity to share with other environmental designers and educators in this beautiful forest retreat.

Dates: February 4-16, 1990.

Location: Lost Valley Center in Dexter, Oregon.

Cost: \$550-\$650 sliding scale (\$100 non-refundable deposit required). Register early, space is limited.

Registration and additional information contact: Great Northwest Permaculture Institute, 2073 Marble Valley-Basin Road, Addy, WA 99101 (509) 935-4578

Dates: Western North America—

February 4-16, 1990

Eastern - February 19 - March 3.

Contacts:

Eastern North America —

Cynthia Edwards, 21300 Heathcote,
Freeland, MD 21053, (301) 343-0280.

Western North America —

Registration & Information:

Larry Santoyo
2073 Marble Valley-Basin Road
Addy, WA 99101
(509) 935-4578

Information only:

Jude Hobbs,
1661 Willamette,
Eugene OR 97401,
(503) 343-6852.

Experience the Runoff Homestead

Date: March 31- April 1.

Location: Datil, New Mexico.

Description: Hands-on experience of a homestead operation solely on harvested runoff water. Two day course includes dryland strategies, swales, microcatchments, terraces and arroyo control.

Sponsored by the Running Rain Society.

Contact

Dan Howell,
Box 74,
Datil, N.M. 87821,
(505) 772-2634.

PERMACULTURE EDUCATIONAL PROGRAMS

Permaculture Design Course

Central Rocky Mountain Permaculture Institute

Date: October 19-30, 1990

This course will emphasize permaculture as applied to: market gardening (using the existing market garden as a demonstration); desert homesteading using water harvesting strategies, and using trees for environmental restoration. Topics will include: Analyzing environmental factors; diversity, stability, resilience of eco-design; energy and nutrient recycling; resource planning - solar, mineral, water, biological; time as a planned resource - deciding priorities; marketing strategies; desert homesteading; farming in the desert with runoff water; water harvesting techniques; tree crops as a permanent agriculture; and other topics.

Instructors: Jerome Osentowski is a Permaculture Design Course graduate with eight years experience in high altitude market gardening. He served as the Land Manager and Head Gardener at the Verena Project and presently makes his living by marketing products from his intensive integrated garden and greenhouse operation.

Michael Pilarski has been a homesteader for the past 16 years in various locations in the Pacific Northwest and is a networker/organizer on local, bioregional, national and international levels. He is the founder of Friends of the Trees Society (F.O.T.S.) and editor of F.O.T.S.'s International Green Front Report and the Actinidea Enthusiasts Newsletter (Kiwifruit).

Michael Pilarski has written and taught in the field of Permaculture since 1981. He is a graduate of Permaculture Design courses by Bill Mollison (1986) and Andrew Jeaves (1983). Michael is the recipient of the 1989 "Permaculture Community Service Award" for vision and work forming an essential and selfless contribution toward the promotion of permaculture and healing of the planet.

Dan Howell is a desert homesteader and expert at harnessing runoff water for the establishment of sustainable food production systems in arid lands. With neither well nor surface water and in an area where annual precipitation averages 12 inches, he has established orchards and year round gardens on his arid 40-acre homestead near Datil, New Mexico.

Other instructors to be announced.

Location: on the site of Jerome's market gardening operation at Basalt Mountain, Colorado: 8 acres of remote mountain terrain which support the house, intensive garden greenhouse, and chickens.

Tuition: Including all organic meals, lodging, curriculum materials and field trips is \$475. Limited to 20 participants. Weekend or single day attendance is \$50/day.

For information contact: Jerome Osentowski, P.O. Box 631, Basalt, CO 81621. Phone: (303) 927-4158.

Master of Science Degree in Sustainable Systems

Excellent progress has been made in our plans for this new degree program at Slippery Rock University. If everything goes according to our expectation it will be in place by Fall of 1990.

Prospective students will be able to enroll in one of three tracks:

- 1) Sustainable Agriculture
- 2) Sustainable Resource Management
- 3) Sustainable Structures and Energy Production.

While a bachelor's degree in one of the natural sciences would be desirable as background for this Master's degree program, it isn't a prerequisite. Our intention is to provide a useful and practical educational experience for the Generalist who shares our deep commitment to healing the earth. If you would like to keep in touch with our progress, call or write to: Dr. William Shiner, Chair; PREE-SRU-Slippery Rock, PA 16057, (412) 794-7503 or Dr. Robert Macoskey, Director; The Alter Project-SRU, Slippery Rock, PA 16057, (412) 794-7322/7397.

"The Art and Science of Environmental Design: a Permaculture Design Course"

"Permaculture is the science of functional design, observed in nature and applied as the ecological management of human settlements and land restoration ... Permaculture calls on all the potential of human intelligence to recognize and implement solutions toward the repair and regeneration of Earth's life systems"

Set in the beautiful Columbia River Bio-region of the inland northwest, the location for the course is on an undeveloped 80 acre "homestead" site. We will learn and implement Permaculture Design techniques as we explore the potentials of the site's forest, creeks and clearings.

We will develop an understanding of how permaculture teaches us, that through observation of the natural world, we can learn to recognize patterns and designs that can serve as our models for managing sustainable systems in our own home and community developments.

This program will meet requirements for Permaculture Design Certification and will also include: • Homestead skills • Environmental issues • Trees, Herbs, Gardens • Political alternatives • Principles of design • Alternative economics • Food, Water, Waste • Small business management • Sustainable forestry • Operating as Non-profit • Patterns in nature • Computer networking • Global village design • Marketing • Soil conservation • Appropriate technologies • Water harvesting • Community Celebration!

Through lectures, field trips and plenty of hands-on, this course in environmental design will allow participants to gain rural and urban "homestead" skills, visiting local cottage industries, orchards and farms, learn and share skills, stay in a primitive setting (with nearby swimming in Columbia River), leading us to a great deal of fun, and a truly awakening educational experience.

Course Leaders include:

Larry Santoyo - Director of Great Northwest Permaculture Institute, brings 10 years of Environmental Education, Resource Protection and Public Lands Management experience

Simon Henderson - Permaculture Projects Director and principal designer of a Permaculture Village development near Spokane, Wash. Has studied "Earth Awareness" of aboriginal peoples around the world.

Michael Pilarski - Founder of the internationally acclaimed "Friends of the Trees Society" and recipient of the 1989 "Permaculture Community Service Award"

Dates - June 3-16, 1990

Location - Addy, Washington (2 hours north of Spokane Airport)

Course cost - \$ 650. (\$200. deposit required. \$ 100 non refundable) Tuition fee includes; registration, instruction, materials, scholarship contribution, all meals, camp site, certification and celebration.

Permaculture Design Course Graduates are encouraged to attend, as a refresher, to help teach, and or to get latest curriculum on "Eco-nomic" goals.

Partial credit, labor, trade available send offer for reduced course cost. (We can only accept a limited number)

Recommended reading: "Permaculture: a Designer's Manual" Bill Mollison

Send registration to:

Great Northwest Permaculture
2073 Marble Valley-Basin Rd.
Addy, Washington 99101
(509) 935-4578

16-Day Permaculture Design Workshop at Genesis Farm

Dates: April 22 - May 7, 1990

Location: Genesis Farm, Blairstown, NJ.

Hosted by Genesis Farm, this program will provide a thorough introduction to the principles & practices of permaculture design.

Instructors: Ianto Evans, Director of the Aprovecho Institute, Dennis Kuklok, and Miriam Therese MacGillis, O.P., all of whom are Permaculture Design Course graduates and experienced teachers and practitioners.

Registration fee: \$600

Contact: Genesis Farm,
Box 622,
Blairstown NJ 07825.
(201) 362-6735

The First International Ecocity Conference

Who: 60 noted speakers and panelists from around the world including planners, architects, environmentalists, educators, authors, builders, energy and transportation professionals and activists.

When: Thursday, March 29 through Sunday, April 1.

Where: Berkeley, California

Cost: \$120/person (\$60 for students, seniors and low-income) for four days. \$160/person after Feb. 1

The first major event to bring together innovators and experts worldwide to consider reshaping towns and cities for ecological health and vitality - 15 featured talks and more than 40 panels and workshops will be held. The conference will focus on methods for creating ecologically healthy towns and cities. Said Urban Ecology's Richard Register, "We want to bring a new theme into the environmental movement: Rebuilding our cities in balance with nature. ...few people grasp the idea that, if ecological principles are applied, cities can have a well tuned coherence, can buzz along on very little energy, can recycle practically everything and leave their regions better -- not worse-- for their presence."

Confirmed participants include: Denis Hayes, Director, Earth Day 1970 & 1990; Huey D. Johnson; physicist/author Fritjof Capra; economist/author Hazel Henderson; Ecotopia author Ernest Callenbach; David Brower; Peter Berg; architect Paolo Soleri.

Further Information:

Urban Ecology, PO Box 10144, Berkeley, CA 94709. 415-549-1724

Opportunities for Broudscale Permaculture in Pending Legislation, continued from pg 11...

The Schneider bill, though presently the most far-reaching legislation of its kind, enjoys broad bi-partisan support.

Nevertheless, passage of the Schneider, Fowler, and Lugar, or comparable bills is by no means assured. Therefore, as permaculturists, let us consider taking a more active role in bringing about appropriate changes in these ways:

- by further studying these legislative developments and writing to members of Congress;
- supporting organizations financially and through volunteer work which can influence changes, and;
- by seeking out new opportunities to implement permaculture should conducive legislation be enacted.

Otherwise I am convinced that permaculture, in a significant global sense, will be condemned to remain little more than theoretical abstractions.

Note: Summaries of the bills discussed or others can be obtained by calling (202) 224-3121. Ask for the office of the sponsoring senator or representative. Very ambitious individuals may also obtain unabridged copies of these bills by the same process, which would be better for influencing this legislation in detail.

Editor's note: Larry Smith has been actively involved in permaculture work since the October, 1988 Eastern Permaculture Gathering (Slippery Rock, PA). After attending IPC 3, he completed the Permaculture Design certification course in New Zealand. Since returning to the US, Larry has become involved in the economic aspects of permaculture implementation, most recently he has studied the implications of energy cropping. For more information on these subjects he can be contacted at: 9508 Potomac Dr., Fort Washington, MD 20744.

ALLIED GROUPS

Ecological Gardening Program at Linnaea Farm

Linnaea Farm, located on Cortez Island, British Columbia, offers an 8-month program in ecological gardening and small farming beginning March 1, 1990.

The program includes theory and practical experience in growing vegetables, fruits, herbs and ornamentals. Training covers basic plant care, with emphasis on British Columbia coastal conditions, year round cropping, specialty marketing and regenerative soil management.

The farm has 5 acres of gardens and orchards set in a 300 acre ecological land trust under Turtle Island Earth Stewards Society.

Completion of the course provides a through grounding in sustainable garden craft. Another benefit of participation is exposure to fulfilling alternatives in food production, livelihood and lifestyle

Tuition for the term is \$850 (Canadian Funds). For further information contact: David Buckner, Linnaea Farm, Manson's Landing, B.C., V0P-1K0, Canada. Phone: (604) 935-6717 - evenings.

The American Minor Breeds Conservancy

"... when the last individual of a race of living things breathes no more, another Heaven and another Earth must pass before such a one can be again." William Beebe

Many breeds of North American farm animals are facing extinction. Close to 100 breeds of cattle, goats, horses, pigs, poultry, and sheep are rare or in decline. If trends in agriculture continue, we will soon have only a few highly-specialized breeds of livestock left for the future. While we will always have cows, sheep, and the other livestock species, the "minor" or non-commercial breeds are threatened, and with them a whole range of useful and important traits.

As a group the minor breeds are long lived, able to forage for their own food, and show a strong maternal instinct, traits not always found in today's commercial breeds. Milking Devons, for example, are traditional homestead cows, good foragers, and able to produce milk and beef without expensive feed or supplements. Cotswolds are hardy sheep with long, lustrous wool for hand-spinning. Scotch Highland and Tamworth pigs fit well into low-input management niches, such as grassfed beef and outdoor pork production.

A diversity of breeds provides farmers with genetic "raw material" to use in adapting to changing conditions and human needs, which are largely unpredictable. They provide today's producers with the option to produce more lean or organic animal products, to reduce the costs of production, and to respond to unexpected future challenges.

There is certainly no "seed bank" in North America, nor any government program to protect our livestock heritage. In fact, government policy and agribusiness interests favor the development of increasingly standardized livestock that will do well only under intensive management. Advances in biotechnology, such as cloning, will further decrease the diversity found now in commercial breeds.

The American Minor Breeds Conservancy is the only organization dedicated to the conservation of all rare breeds in North America. Our projects include:

- identifying minor breeds and studying breed status, characteristics, and uses;
- providing information on rare breeds to AMBC members and the public with a newsletter and other publications;
- encouraging the formation of breed associations and helping breeders promote specific breeds in appropriate commercial operations, living history museums, and on farms;
- establishing a minor breeds semen bank for cattle and other livestock species;
- working with organizations around the world to build a global strategy for conservation of minor breeds.

The American Minor Breeds Conservancy
Box 477 Pitsboro, NC 27312. (919) 542-5704

LETTERS

If you have questions, comments, opinions, or useful information of any sort to share with other readers of *The Permaculture Activist*, please write to us. Letters to the editor should be concise, i.e. short and to the point, and relevant to the lives of other permaculture activists.

Cooperation or Confrontation?

Dear Editor;

I was surprised and pleased to read your remarks about livestock grazing in the Autumn '89 issue of *The Permaculture Activist*. When I was at Jerome [Osentowski's] teaching the drylands section of the design course I expressed similar views. My feeling is that only through cooperation instead of confrontation can anything meaningful be accomplished on western rangelands. Designed systems need to be pitched to stockmen and ranchers that point out increased weight gains, improved carrying capacities and other issues, meant to get their attention. Once Permaculture is not perceived as a threat it will be possible to make changes from within instead of assault from without.

Karen and I would like to announce our forming of the Running Rain Society. Our intention is to promote permaculture in the southwest. Our high desert runoff demonstration farm will be used in ongoing applied research into sustainable living and education. Those interested in information sharing and gathering projects or memberships, please send S.A.S.E. We are having a spring workshop.

Experience the Runoff Homestead March 31 - April 1.

Hands-on experience of a homestead operation solely on harvested runoff water. Two day course includes dryland strategies, swales, microcatchments, terraces and arroyo control. Sponsored by the Running Rain Society.

Location: Datil, New Mexico. Contact Dan Howell, Box 74, Datil, N.M. 87821, (505) 772-2634.

Yours Truly,
Daniel J. Howell

Kansas Land Trust Update

Dear Editor:

To update the vita you printed to accompany Jim Rich's articles in your last issue, Jim and I hit an impasse in our attempt to create a Kansas Land Trust. Perhaps one of your readers knows a path around it. Here's the situation:

Our effort to create KLT was secondary to our effort to create an ecological village. The KLT was to serve as the nonprofit landholder of the village land (as well as offering protection to other land that Kansans want to place in trust).

But the models we received of existing community land trusts were all organized as 501(c)(3) educational, research organizations that are required by the IRS to be financed by contributions to demonstrate "broad public support." No one donor can give more than 2% of the annual budget. Our newborn village has so far only four people, none of whom has any talent or interest in fundraising. Our village simply is not what the IRS requires it to be to qualify for 501(c)(3) status. We were not able to find another nonprofit organization to be our parent corporation so the village could be a 501(c)(2), either, as the statements of purpose have to be nearly identical.

We have 47.5 acres that we hold in common and on which we will build our ecological houses and raise our own food using sustainable agriculture methods. We hope to have a total of ten families on this land eventually, with each family having usufruct of two acres for their home and gardens with the remaining twenty acres or so as commons area. We do plan to publish our experiences in periodicals like *The Permaculture Activist* as the years go by so that others can learn from our successes and mistakes as we learn-by-doing how to live in harmony with the planet. But our primary focus will be the actual process of making it possible for us to live in this manner. None of us starts with a lot of money.

At this time, we three families (one couple, two singles) have spent more than the amount we had saved for land purchase. We really have to scrounge to buy materials to build our homes. None of us has funds to hire a lawyer to help us get incorporated with nonprofit status. We're afraid to incorporate without nonprofit status for fear the IRS will tax us once on the income we each earned to buy the land and then turn around and tax us again as a corporation on the value of the land we would donate to the corporation. Yet we feel vulnerable with the present arrangement of holding the land in common as

individuals, in case of death or catastrophic illness and subsequent debt. We need for the village land to be safe from ever being sold again (we paid cash).

Does anyone out there know a solution to our problem? Sincerely,

Claire Van Wyngarden
P.S. our temporary address while we are building is: Box 36, RR 1, Hillsboro, KS 67063

Mulch Crops In Strips

Dear Permaculture Activists:

An interesting idea I came up with from various sources (Rodale, Central American observations, and personal experiments) is to grow mulch (alfalfa, straw, vetch or what works in your area) on a quarter or more of your farm/garden area in strips between your rows/beds which you mow/cut in spring/late summer or as needed to mulch over clover or other winter green manure crops (to set them back/kill) or on summer weeds or to supplement biomass/living/in-situ mulch that you grow with your crops (beans in corn, lambsquarters in corn or sunflower, potato vines/leaves, etc). What I envision is a no-till gardening system, requiring less water (drip), less labor (fewer weeds from the heavy mulch and from drip), less labor and less capital due to no tilling/cultivating, less purchased inputs since mulch is mostly grown on site (and if mulch is a legume then it is type of fallow/soil builder in the mulch growing area, which could be rotated). Drip systems might not be needed in some areas, but the no-till characteristics of this system make drip a cheaper proposal because you don't have to remove it for plowing or cultivation and so it lasts longer and requires little labor.?? Well, let me know what you think about this,

Mark Sidles
3401 N. Columbus #8-0
Tucson, AZ 85712 (602) 327-5041

Granted, many of the folks who attend will probably travel overseas at some point anyhow, so why not combine "recreational" travel with useful work, networking and learning along the way? If people are going to travel anyhow, let's get 'em to go to IPC 4, they will be paying registration fees for the conference, the proceeds of which are will be well spent by INSAN and local Nepal.

But if each participant instead spent their \$1500 to start a business, or hire people to help out with an existing business, or purchase a share in a land partnership, or buy tools, ... or even spent it on phone calls or books or local educational programs - these are the alternative "information gathering techniques". \$1500 in phone calls gets you a lot of information, as would \$1500 in books.

Rather than contributing my \$1500 to the airlines, or my \$500 for registration fees (to INSAN), I'm making a personal pledge to spend \$2000 within the PC movement by hiring other PCers to do work that I presently need, and/or, grant part of this money to individuals who need it for business or organizational development. This constitutes a "R.F.P." - a request for proposals - please send me your ideas.

Sincerely, Guy Baldwin, Editor *The Permaculture Activist*

International Travel - would the money be better spent at home?

Dear Readers;

In the spirit of cooperation we will publish regular news on the upcoming 4th International Permaculture Convergence/Conference in Nepal (see pg 20.) Yet I feel compelled to propose an alternative scenario for the wise use of our resources to promote permaculture.

First off, I question the effectiveness of any international or even a National or Continent-wide conference as a forum for decision making or internal organizing. I'm not encouraged by how useful the past three IPC's have been in accomplishing the real work of getting PC "on the ground". Yes, these conferences can be a real boost for the host group (it can also be a burnout). Participants also have great opportunity to learn, meet new people, and see permaculture in action by visiting people along the way.

The often unspoken reality is that very few 3rd worlders or even Napolis will be able to attend, and those who do will likely be in the upper echelons of society. Same as it ever was... travel is expensive and not a possibility for people living a subsistence lifestyle. Yet, useful information for those 3rd World people who do manage to attend should be a priority.

Just for a moment, let's think about the dollars that will be devoted to this project, not only from the organization's standpoint (i.e., the \$20,000 that has been proposed as a budget for the North American organizing committee), but also each individuals' travel costs.

Estimating 200 overseas attendees (an overestimate judging from the N.Z. and North American experiences with IPC 3, and 2) at an average cost of \$1500 in air and bus fares, etc. this multiplies out to \$300,000 - all of which will essentially get "burned up in smoke" - it goes directly to the airlines and most of it is burned as jet fuel.

PERMACULTURE COMMUNICATIONS

Permaculture I: \$16.00; **Permaculture II:** \$16.00

Permaculture: A Designer's Manual. Bill Mollison's new book is the new, definitive permaculture design manual covering all aspects of property design and natural farming techniques, and includes: Microclimate & broadscale techniques • Species selection, placement & management • Multipurpose shelterbelt, woodlot, orchard & forage systems • Plant succession & ecology • Revegetation & afforestation techniques • Home gardens • Zone & sector design • Arid- and humid-land techniques & strategies • Rangelands management • Soil conservation & rehabilitation of degraded lands • Water & irrigation systems • Earthworks: terraces, swales, dams & canals • Ecological principles & practices • Forest systems • Wildlife management • Recycling/waste disposal • Bioregional organization • Land access strategies • Community financing systems • Village development • Writing reports • Business strategies • Ethical values for a new world— and much, much more!

\$59.95 plus \$3 postage & handling per book. Hardcover, over 500 pages with 130 color photos and hundreds of illustrations.

Permaculture Journal of the International Permaculture Association - Back issues are available - an incredible source of background information on permaculture!
Issues #7 - #33 @ \$4.00. Issue #31 contains an index to all previous issues.

Subtropical Fruits - A Compendium of Needs and Uses is a two-color poster, 26"x30" listing over 98 species and varieties of subtropical fruit trees, vines and shrubs. Great for nurseries, farmers and home orchardists. Info on each species includes climatic tolerance, fruit characteristics, plant uses, cultural/management requirements, maturity times. Cost: \$14.00 (+ 84¢ sales tax for CA residents).

Permaculture Designers Directory, 1987 edition lists 450 graduates of Permaculture Design Courses in North America with biographical info, consulting services offered, skills, resources. Cost: \$6.00.

Perspectives on Plant Symbiosis: \$2.50;

Symbiont Inoculation Strategies

for the Nursery: \$3.50. Both for \$5.00.

by Michael Crofoot. These two works cover: • nitrogen-fixing bacteria • mycorrhizal fungi • their symbiotic interactions with plant roots. • methods to utilize and enhance these species for the amateur or professional plant propagator.

Other Titles:

Designing your Edible Landscape	Robert Kourik	16.95
Ferrocement Water Tanks	S.B. Watt	11.25
Fireplaces	Kern, Magers	7.00
Food, Fuel & Fertilizer from Organic Wastes	B.O.S.T.I.D.	8.50
1988 Int'l Green Front Report	Pilarski	5.00
More Water for Arid Lands	Nat. Acad. of Sciences	8.50
Stone Masonry	Kern, Magers, Penfield	8.95
The Earth-Sheltered Owner Built Home	Kern & Mullan	9.95
The Natural Way of Farming	Masanobu Fukuoka	15.95
The Road Back to Nature	Masanobu Fukuoka	17.95
The Ohlone Way	Malcolm Margolin	6.95
The Owner Built Homestead	Ken & Barbara 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**

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6% sales tax to your order**

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20% discount on purchase of 5 or more copies of any back issues;
30% discount on orders of 10 or more.

Order from:

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

Southwest Regional Permaculture Institute

Permaculture resources now available:

Permaculture: A Designer's Manual by Bill Mollison (1988). Weight: 5 pounds. \$59.95

Permaculture One by Bill Mollison and David Holmgren (1974). Weight: 1 pound. \$16.00

Permaculture Two by Bill Mollison (1979). Weight: 2 pounds. \$16.00

How to Incorporate as a Non Profit by Scott Pittman: This 100-page manual leads you through the procedures for applying to your state for corporation status, and to the federal government for tax-exempt status. These materials will help any would-be non profit organization save possibly thousands of dollars as well as many, many hours of eye-blearing work. Weight: 1 pound. \$35.00

Back issues of **Sustainable Living in Drylands** newsletter. Issues 1, 2, 3, 4, and 5. Postpaid. \$2.00 each

To calculate shipping charges: Determine total weight of all items. Enclose \$1.50 for the first pound, and 30¢ for each additional pound. Orders are shipped via UPS unless a street address is not available. Orders to Post Office boxes will be sent via U.S. Mail, 4th class, and may take up to 4 weeks to arrive.

Order from: Southwest Regional Permaculture Institute, P.O. Box 27371, Tucson, AZ 85726-7371, (602) 622-4512

CLASSIFIEDS

Help Wanted

Work Trade Scholarship Offered- for Permaculture Design Course in exchange for construction and or office skills. Help needed in May to prepare site for upcoming design course. Send resume to: Great Northwest Permaculture, 2073 Marble Valley-Basin Rd, Addy, WA 99101

Land stewards/apprentice co-workers sought for historical farm/hydropower plant undergoing restoration in Sierra Nevada foothills. Housing and garden space available. Estimated minimum self-support needed-\$150 monthly. Permaculture design work in progress and restoration underway. Remote, peaceful location ideal for personal projects needing same. 6 mos.-1 yr. position for 2-4 people. Contact John and Annie Olmstead, 11822 Lost Ranch Wy, Nevada City, CA 95959 tel.(916) 272-3823

CLASSIFIEDS

Classified Ad Rates - 20¢/word, \$5.00 minimum, advance payment required. Send ad and payment to: *The Permaculture Activist*, P.O. Box 101, Davis, CA 95617. Free 25 word ad with any subscription to the *Activist*.

Books & Publications

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

How to Build the 5,000 Gallon Ferro-Cement Water Tank that needs no building permit! \$10. Ridgehaven, POB 849, Glen Ellen, CA 95442.

EARTHSONG NOTES: empowering people to create a new reality. Newsletter: 6 issues/yr \$18; permaculture, recycling, herbology, conscious buying habits. Free Sample, please include \$1 to cover postage. EARTHSONG-PA, Box 2263, Little Falls, NJ 07424. Walk in balance on the Earth Mother. TYGS.

Portable dwelling Info-letter: about camping, hiking, bicycling, traveling; and living in tent, tipi, wickiup, van, trailer, boat, remote cabin, etc. Reader written. Frank discussions. Sample \$1. *Message Post*, P.O. Box 190-PA, Philomath, OR 97370.

Help Wanted

Experimental Central Florida homestead seeks PC-type apprentices, technicians and visitors to assist res. mgt. person create and demonstrate a "green lifestyle"; a wildlife-friendly, comfortable, human-support system. Project starts 4/90. Daniels, Box 813, Fairfax, CA 94930. 415-453-7176.

Big Island edible landscape resource net seeks collaborators and authors for permaculture design newsletter, demonstration farm/design center. Epicenter Hawaii, Box 1612, Kealahou, HI 96750.

Needed: full-time or part-time worker or partner for herb/flower/vegetable market garden. Housing available in 16-ft yurt. Pay negotiable. Contact: Sharon Casey, Original Thoughts, 1893 Pleasant Grove Ln, Marysville, CA 95901. (916) 679-2729

POSITION AVAILABLE for Apprentice (inexperienced - room & board; experienced - room & board + salary). Integrated greenhouse and market gardens, developing permaculture orchard. Marketing unique salad mix and herbs to Aspen resorts. Beautiful secluded location. Jerome Osentowski, Box 631, Basalt CO 81621. (303) 927-4158.

Permaculture Farm Manager, boys' group home. \$10,000, room & board. 100 acres high desert, greenhouse, animals, irrigation. Contact Jemez House, Box 178, Alcalde, NM 87511. (see pg. 25 for more information)

Feed & Seed

Unique wildflower greeting cards, handcrafted, parchment-like paper. Send \$1.25 for sample. 1% to tree-planting fund. Running Rain Cards, Box 74, Datil, NM 87821

CAROB PODS - candy bars that grow on trees! Whole pods, you can eat everything but the seeds. High in protein and natural sugars. Good for backpacking, won't melt, store well (6 months without refrigeration, if kept dry). \$3.50/lb (post paid, min. 1 lb.). Mahala Mat's Seed Co., 1893 Pleasant Grove Ln., Marysville CA, 95901.

Nursery Supplies

Fruit Trees - 100 Varieties. Apples, Pears & other fruits. Sonoma Antique Apple Nursery, 4395 Westside Rd, Healdsburg, CA 95448. Catalog \$1.00

Audio/Visuals

Audio Tapes of Bill Mollison's PC Design Course 25 Tapes in all, prepared by Brett Hudelson. Cost: \$5.00/tape + 75¢ postage & handling per tape. For complete index, contact: Brett Hudelson, 147 Central, Ashland, OR 97520

Income Opportunities

Excellent income possibilities working as few as 10 hours per week helping people save and earn money. Ideal financial support for farmstead building. Diverts funds from consumptive economy. Individuals or organizations. Manzanita Xompany, 1731 Hendrix Ave., Thousand Oaks, CA 91360

Real Estate

Creative Land Acquisition—Get land for yourself and others using forgotten laws and new ideas. Information packet \$1 (refundable). Ridgehaven, POB 849, Glen Ellen, CA 95442.

Hawaii Homestead on semi-rural North Shore of Oahu seeks vegetarian, spiritually-oriented person or couple to co-create and implement a permaculture design on 3-1/2 acres of mostly wooded mountain land—and to help promote permaculture, fend off developers. Must also pay small cash rent and help out with routine housekeeping. Write to P.O. Box 1198, Haleiwa, HI 96712.

Own your own private 65-acre wilderness area on beautiful Lake Berryessa. The money you pay will be reinvested by the present owners to buy and preserve additional land near this and other protected parcels, which, together, comprise Quail Ridge Wilderness Preserve. For more information, please call Frank Maurer (916) 758-1387. Rt 3, Box 2470, Davis, CA 95616.

Additional Shareholders needed to share in Land Trust which has purchased a beautiful 800 acre ranch which consists of pristine wilderness in Texas hill country. Permaculture Community being formed. Contact Scott Pittman - (505) 982-02063 or Dick Ecklund - (512) 333-7110 or (512) 661-7849.

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CALENDAR

February 4 - 16, 1990. Dexter, OR - **Advanced Permaculture Design/Teacher Training Course**, taught by Max Lindegger and Lea Harrison. Contact: Larry Santoyo, 2073 Marble Valley -Basin Rd., Addy WA 99101. (509) 935-4578.

February 10, Doylestown, PA, **Designing a Sustainable World, An Introduction to the Art & Science of Permaculture**, taught by Cynthia Edwards. contact: Patty Ceglia, 6370C Greenhill Rd, New Hope, PA 18938.

February 19 - March 3, somewhere in the Eastern U.S., **Advanced Permaculture Design/Teacher Training Course**, taught by Max Lindegger and Lea Harrison. Contact: Cynthia Edwards, 21300 Heathcote, Freeland, MD 21053, (301) 343-0280.

March 9 - 18, Austin, TX - **Permaculture Design Intensive**, taught by Patricia DuBose. Contact Heartland Permaculture 8801 Scarlet Circle, Austin, TX 78737. (512) 288-6950.

April 22 - May 7. Genesis Farm, Blairstown, NJ. 16-day **Permaculture Workshop** led by Ianto Evans, Dennis Kuklok, and Miriam Therese MacGillis, O.P. Contact: Genesis Farm, Box 622, Blairstown, NJ 07825. (201) 362-6735.

June 3-16. **Northeastern Washington Permaculture Design Course** taught by Larry Santoyo, Simon Henderson, and Michael Pilarski. Contact: Great Northwest Permaculture, 2073 Marble Valley-Basin Rd, Addy, WA 99101, 509 935-4578.

June 11 - July 2. St Louis, MO - **Permaculture Design Course**. Taught by Dan Hemenway. Contact: Elfin Permaculture, PO Box 16683, Wichita, KS 67216.

June 22-24. Murrietta Hot Springs, CA - **Permaculture Workshop** with Simon Henderson and Larry Santoyo. Contact: Melody McNally, 6330 Randi Ave, E223, Woodland Hills, CA 91367. ph. 818 340-5356 or Great Northwest Permaculture.

July 15 - August 11. **One-month Permaculture Design Course at Gap Mountain, NH**. Instructors: Jo Clayson, Doug Clayton, Jude Gregory and Dave Jacke. Contact: Dave Jacke, 9 Old County Rd, Jaffrey HH, 03452, (603) 532-6877, or Sharon Devine, 38 Boylston St., Jamaica Plain, MA 02130, (617) 524-7092.

October 19-30. **Permaculture Design Course, At Jerome's Organic Farm, Basalt, Colorado**. Instructors: Michael Pilarski & Jerome Osentowski. Central Rocky Mountain Foundation, PO Box 631, Basalt, CO 81621. (303) 927-4158.

November 8-20. **Northern Great Plains/Minnesota. Permaculture Design Course**. Instructor: Michael Pilarski. Contact: Friends of the Trees, PO Box 185, Port Townsend, WA 98368. (206) 385-9288.

January 13 - 25, 1991 Kathmandu, Nepal, **Permaculture Design Course**. See information for INSAN below.

February 2 - 6, 1991 Biratnagar, Nepal, **Fourth International Permaculture Designers' Convergence**, Sponsored by Institute for Sustainable Agriculture Nepal, GPO Box 3033, Kathmandu, Nepal. ph: (977) (01)524509. North American Contact: Cynthia Edwards, 21300 Heathcote, Freeland, MD 21053, (301) 343-0280. Details, pg 20.

February 10 - 16, 1991. Kathmandu, Nepal, **Fourth International Permaculture Design Conference**, Sponsored by Institute for Sustainable Agriculture Nepal, GPO Box 3033, Kathmandu, Nepal, ph: (977) (01) 524509. North American Contact: Cynthia Edwards, 21300 Heathcote, Freeland, MD 21053, ph: (301) 343-0280. Details, pg 20.

February 21 - March 7, 1991 Kathmandu, Nepal, **Permaculture Design Course**. See information for INSAN above.

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