EDN

ECHO DEVELOPMENT NOTES

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ATEMOYA, A QUALITY TROPICAL FRUIT. Though I (MLP) enjoy many fruits, there are few that I consider a fully adequate dessert. The atemoya is one of those few. Most evenings this past month my wife and I have cut in half one fist-sized fruit, well chilled in the refrigerator, and enjoyed what we call "atemoya on the half shell" for dessert. We eat it with a grapefruit spoon right out of the thin rind.

Atemoya is a 1908 man-made cross between two members of the annona family, cherimoya (*Annona cherimola*) and sugar apple (*A. squamosa*). Soursop and custard apple are other annonas. The name comes from an old Mexican name for sugar apple "*ate*" and the "moya" from cherimoya.

Photo by Karen Lugtigheid.

The snow-white flesh is much firmer than a sugar apple and the seeds less numerous. The tree bears over a period of perhaps a month. Knowing when to pick it can be difficult. The ideal time to pick it is a few minutes before it falls to the ground! Since that is seldom possible, we usually look under the tree twice a day and pick them from the ground. This process would not be suitable for commercial growers, but works fine in the back yard. Green fruit ripens in a few days if picked close to maturity. If picked too soon, the fruit will not ripen.

Florida homeowners plant grafted trees. For the purpose of introducing atemoya into a new region, there is a good chance that many if not most seedling trees will produce good-tasting fruit, and will probably bear in about three years. You can then graft the best few in future generations.

A fruit of the hot, humid tropics, atemoya will withstand modest freezes (reflecting the cherimoya, a high-altitude annona, in its ancestry). ECHO now has fresh atemoya seed available. Trial packets are free to those working with small farmers overseas; others please send $2.50/packet.

WHEN YOU NEED TO COVER FRUITS OR HEADS OF GRAIN. A note in *Organic Gardening* magazine mentioned commercially available "seed drying bags" made from closely-woven nylon netting. Uses might include keeping insects from laying eggs on the grain or fruit, catching seeds when they fall, or repelling birds. The loose weave of the bags allows air and moisture to move in and out, reducing potential for mold damage. They were priced quite high at $1.30 each. They could be made much less expensively.

In many countries agricultural supply stores now sell "spun bonded fabric" or "floating row covers." These fabrics have two primary uses. Thicker ones are used to protect vegetables from frost. Thinner ones are used to make a cloche (like a long tunnel) over a row of vegetables to keep flying insects from depositing eggs on plants, thus avoiding the need for insecticides but allowing passage of air and moisture.

It is easy to sew this material into bags of just the right size. It is also a good way to salvage pieces of used material that have too many holes for other uses. The material costs only a few cents per bag. We will try using it to keep papaya fruit flies from filling our papayas with larvae and to keep birds away from the grain of small plots of sorghum that we grow for the seedbank. If you find the material and try this, let us know what happens.

WHEN E-MAIL IS EXPENSIVE. We recently received a note saying, "Thank you for sending me E-mail versions of materials and the latest EDN. Just one thing you may like to note--with our E-mail we pay for each KB we send and receive. This means it cost us about $7.50 to receive what you sent me."

We realize that some but not all of you are in this situation. When you send us an inquiry by E-mail we often face a dilemma. You may be in a hurry and would like a reply by E-mail or want an E-mail reply because it may be more reliable than surface mail. On the other hand, you may not want to pay much for a fast answer. To further complicate

things, some of you pay a flat rate and an E-mail reply will not cost extra. When you write, please state if you want your reply by E-mail or airmail.

In any event, always give us your postal address, even if you want an E-mail reply.

NEW INTERNET SERVICES FOR ECHO'S NETWORK. In addition to our world wide web home page, ECHO now has two automated E-mail "conferences" available. Anyone with E-mail service can subscribe to an automated E-mail conference free of charge simply by sending the appropriate commands as an E-mail message to a special computer.

The first "conference" is called ECHO-DEVELOPMENT-NOTES because all subscribers will automatically receive EDN (without illustrations) as an E-mail message each quarter. Use this service in place of your hard copy or to get your EDN information faster than the postal service can deliver. Occasionally we may send announcements related to our services as well.

The second "conference" is called ECHO-NETWORK-FORUM because it is meant to be a true forum in which subscribers can share problems and solutions related to agriculture in the third world. Once you have subscribed to the central computer, any E-mail message sent to the special ECHO-NETWORK-FORUM address will automatically be sent to you and every other subscriber, allowing everyone a chance to respond to problems and ideas as they wish. After one year, ECHO staff will evaluate the forum. ECHO will also send the E-mail version of EDN to this forum, so there is no need to subscribe to both ECHO E-mail conferences.

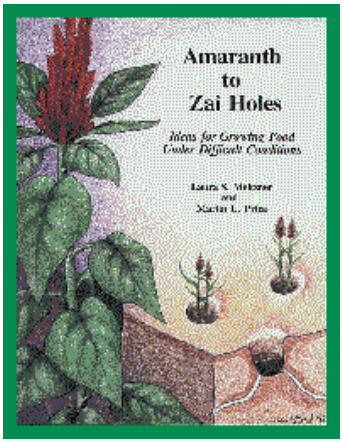
Please note that subscribing to ECHO-DEVELOPMENT-NOTES will result in four to six large messages a year from ECHO, but subscribing to ECHO-NETWORK-FORUM could result in several messages a day sent to your address [I (Daniel Sonke) once was subscribed to a gardening conference that sometimes resulted in 40 messages a day; other forums result in three per week]. If you pay dearly for E-mail according to volume, you likely will want to think twice about subscribing to ECHO-NETWORK-FORUM.

To subscribe to ECHO-DEVELOPMENT-NOTES send an E-mail message to the computer at hub@xc.org. Use no subject and write in the body of your message the words **subscribe ECHO-DEVELOPMENT-NOTES**. If you want to stop your subscription, do the same using the word **unsubscribe** instead of **subscribe**.

To subscribe to ECHO-NETWORK-FORUM send an E-mail message to hub@xc.org. Use no subject and write in the body of your message the word **subscribe** followed by **ECHO-NETWORK-FORUM**. To send a message to the forum, use the address **ECHO-NETWORK-FORUM@xc.org**, NOT hub@xc.org. All messages sent to ECHO-NETWORK-FORUM@xc.org will be read by all subscribers, so we trust you will be tactful and not use the forum for issues unrelated to development. To unsubscribe, send a message to **hub@xc.org**, using **unsubscribe ECHO-NETWORK-FORUM**.

Upon subscribing to either forum, you will receive a short confirmation message from the hub computer confirming that you are subscribed.

OUR NEW BOOK HAS ARRIVED! *Amaranth to Zai Holes: ideas for growing food under difficult conditions* is in the mail to those who ordered. In future issues of EDN we will assume readers have access to this book and will refer you to it rather than repeating that information.



I will not presume to review our own book, except for one comment. In most general subject books, someone who has read widely will know perhaps 95% of the material. Every gardening book always tells how to make compost, grow a tomato, etc. In writing EDN we assume that most readers have a general background of common knowledge. If most readers already know something, we do not print it. Consequently, we suspect that most readers will find that they are learning new material on nearly every page. At least that is our hope. The many book reviews point to books which either cover important agriculture development basics or give in-depth treatment to specific subjects.

My co-author, Laura Meitzner, spent months updating, organizing and sometimes re-writing material. Every address and price was checked to make sure they were current. Laura is now pursuing her masters degree at Cornell University and serving as a "roving reporter" for ECHO at the same time.

We hope that most members of our network order a copy of *Amaranth to Zai Holes*. The book costs US$29.95 plus postage in North America, but there is a special discount for members of ECHO's overseas network. If you qualify for a free subscription to EDN, prices are as follows: in the Americas, US$25 includes airmail; in Europe, Africa, and Asia, $25 includes surface mail and $35 includes air mail. We accept only US dollars. Write a check to "ECHO" or give us your Mastercard/Visa number and signed authorization to charge your account. To order a large

quantity, contact us first for shipping details. This will be a great resource as you evaluate new ways to help people produce their food and make a living in the tropics.

SINGLE-DOSE TREATMENT FOR WORMS. [Excerpted from *Cornell Focus*, Vol. 5, 1996]. Studies were conducted by international nutrition specialists Dr. Lani Stephenson and Michael Latham (also a physician) in Kenyans infected with hookworm, whipworm, and/or roundworm. They found that a single treatment with albendazole costing 10¢ dramatically improved growth, fitness and appetite. In one study, four months after giving each of 320 primary school children a single pill (produced by SmithKline Beecham), they had gained three times more weight and showed an increased appetite, compared to a group receiving a placebo. "Treating for worms improves growth as much as, and usually much more, than school feeding programs." Although reinfection is likely, it takes time for the harmful effects of the parasite to build up. In the meantime, treatments would help children grow and learn normally.

Estimates suggest that worldwide 1.4 billion people are infected with roundworms, 1 billion with hookworm and 800 million with whipworm.

USING OWLS TO CONTROL RATS. (The following is excerpted from "Barn Owl--a biological rat trap" in *Groundcover* No. 24, 1996.) "In Malaysia it has been estimated that it costs oil palm growers US$45 million to control rats. Not only that but they consume US$16.9 million worth of rice each year." "In the eighties the Palm Oil Research Institute of Malaysia introduced barn owls into an integrated pest management program. The success of the owls became obvious almost overnight...mainly because the birds were given artificial nesting sites. Inadequate nesting areas had discouraged owls from breeding despite the food surplus. In one oil palm estate, the occupancy rate of nesting sites reached 80% during the breeding season." They recommend placing one nest box every 10 ha.

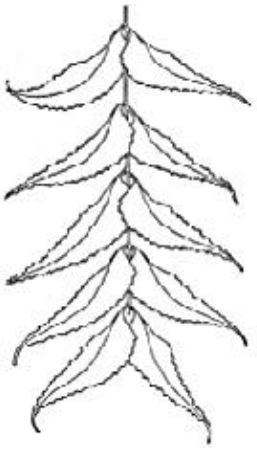
"The Malaysian research has helped dispel the myth that barn owls hunt only in open areas. They found that the birds change their hunting mode to suite the vegetation. Instead of flying over the area scouting for prey the owls perch on palm fronds and wait for rats to pass by. The researchers put up perching posts to encourage this." The owls eat almost nothing but rodents. A breeding pair of owls with offspring need about 1200 rats per year. To encourage populations of owls and other natural predators (e. g. chameleons and snakes), islands of natural vegetation in fields should be preserved.

Write ECHO if you need plans for a simple barn owl nest box.

HEART MISSIONARY TRAINING INSTITUTE prepares Christian missionaries to live in third world settings through practical training in a simulated subtropical village. Students learn appropriate technologies, primary health, nutrition, cross-cultural communication and community development, small-animal husbandry, and intensive gardening. Training sessions are 1-15 weeks or can be tailored for groups. The 15-week semester cost $2875 in 1996, and matching scholarships are available. HEART is 2 hours from ECHO. Contact HEART Institute, 5301 U.S. Hwy. 27 South, Lake Wales, FL 33853, USA; phone 941/638-1188; fax 941/638-1472.

ECHOES FROM OUR NETWORK

CINDY FAKE with Food for the Hungry in Mozambique wrote about her experiences controlling locusts with a tea made from leaves of the neem tree (*Azadirachta indica)*. Unfortunately, her seed shipments from ECHO were delayed and did not germinate upon arrival, but she found (dried) seed from another source and now has 250 seedlings. "We have regular invasions of red locust. During the last invasion when they were devouring everything in their path, our research plots of maize and cowpea were completely untouched. They had been treated with a neem-leaf mixture, as we don't have seed yet. The Locusts went for synthetic-pesticide-treated plots, but not neem! Now all the farmers and extensionists in Sofala province want neem trees."



We thought this was important enough to ask some follow-up questions.

Q. What led you to choose leaves rather than seeds to make the spray?

A. We know that seeds contain higher concentrations of active ingredients than leaves, but our first trees were started only two years ago. We do not yet have seed-producing trees, and when we do, we want to use the seed to multiply the trees.

Q. Would you tell us precisely how the tea was made?

A. We used a mortar and pestle to pound 500 g of green leaves, added 10 liters of water, and left it overnight. The following day the mixture was strained through a cloth and a small amount of soap was added to help the spray stick to the leaves. The straining process is quite slow. In order to

reduce the straining time, we also tried mixing the pounded leaves with only 5 liters of water on the first day, leaving it overnight, and adding the other 5 liters of water after straining, but this was less effective. On the research farm, botanical sprays are applied with backpack sprayers. Most farmers use small brooms that they make from grass or leaves and apply by shaking the solution onto the leaves until it drips off.

Q. How large were the plots?

A. The research farm is 4 ha, but only selected parts (about 1 ha, not-contiguous) were treated with neem.

Q. Did you notice any locusts landing on your crops, then leaving, or did they just avoid them altogether?

A. The locusts did land on the neem-treated crops, but left without feeding.

Q. Were the protected maize and cowpea plots surrounded by other maize and cowpea plots that were destroyed, or were they isolated?

A. There were other maize and cowpea plots surrounding the neem-treated plots, and they were badly attacked. Most of this area consisted of our most valuable and/or vulnerable fields of maize and sorghum during the red locust attack. We also used neem tea throughout the season as one of six treatments on a replicated trial of botanical pesticides in cowpea. In this trial, the red locusts caused varying degrees of damage to the other 5 treatments, but only minimal damage to the neem-treated plots. We have not yet completed data analysis, so cannot say anything about the effect on final cowpea yield.

Cindy's term has now ended, so anyone wanting to communicate further should write to Tracey Henderson or Tonette Demagante, FHI/Mozambique, P. O. Box 1390, Mutare, Zimbabwe. E-mail spear@maf.org.

Meg LaVal in Costa Rica wrote of her successes with vermicomposting, or using worms to create compost quickly. "I have worked intensively with worms for 6 months and had good results. Monteverde is at 1500 m elevation, with marked dry (Dec - mid May)/wet seasons with about 2500mm of rain a year.

"In Costa Rica, like many places in the world, people look on garbage as a problem, instead of seeing it as a source of organic matter to replenish our much-depleted soils. We got our California red worms from Paul Vasquez, a microbiologist neighbor who was already doing vermicomposting on a fairly large scale, and helping train the personnel at the coffee processing plant. Worms are also available from several experiment stations. We have attracted numbers of the wild local kind as well. However, since the rains have started they have migrated outward, much faster than the California reds.

"The main thrust of our project in Monteverde is to compost the organic waste of Stella's Bakery (and restaurant) and the manure from Meg's Stables. The dry season is also the time of higher tourism and hence more garbage. During this time we mix 1/2 manure and 1/2 organic garbage in 1x3m beds. These beds are constructed directly on the ground, with an edging of plastic sheeting draped over wire (20-30 cm high) to hold the organic material. We mix and wet each bed daily for 6-10 days (at this time the garbage should not smell bad, particularly not acid or vinegary). After 6-8 days the bed is usually ready for a few test worms. We sprinkle a few (10-20) on the surface. If they find it to their liking, they rapidly disappear. In a day or two we dig around and find them and see if they look healthy and active; if so, we add another 3,000." [Ed.: Authors give varying advice on how long to compost the materials before adding worms, ranging from a week to a month. The principle is that hot compost can burn the worms, so be sure the material is over that initial heating.]

"In the dry season, we wet these beds twice a day: in the morning and around 2 pm. We also turn them 1-2 times a week to aerate them and keep them from becoming too compacted. [Ed.: Moisture content should be about 75%, which is wet enough to feel moist but not wet enough to squeeze water from a handful of soil. Drainage is necessary. A SIFAT publication mentions using run-off from worm beds as foliar fertilizer.]

"When the material looks like dirt (6 or so weeks) it is time to trap out the worms. We push all the dirt to the center of the bed, and put aged horse manure/garbage mixture at the ends. This attracts the worms, which you can either move to another bed by picking them up material and all, or by leaving them there and removing the finished compost and adding fresh material to replace it. If there are many eggs you will need to wait until they have hatched (they hatch in three weeks), and the young have also migrated. To help encourage the last of the stragglers to leave the dirt, stop watering the middle of the bed. If you are particularly short of worms, you can hand-pick the last few from the dirt when you take it out of the bed. After all the eggs have hatched and we have trapped all the worms, we take the finished product to our organic garden. Several people have offered to buy the finished compost, but we haven't had more than we can use yet. We started with 5 kilos of worm/dirt/egg mixture, which is how you buy them here. Six months later it was estimated that we had 300 kilos.

"Several side projects have also sprouted from the main one. Some friends expressed interest in a household version. Thinking that not everyone would care to stoop over to deal with their worms, I constructed a 1x1m box on legs, with drain holes. I put slightly decomposed hay waste in it as bedding, then added 1000 or so worms. Daily, I bury a

large double handful of garbage around the edge of the box. By the time I make it all the way around, they have eaten all the original garbage, and I can start around again. This has great appeal to housewives, as they can have it right outside their back door. Several have made their own boxes so they could get started, as they really appreciate the end product for their flowers and gardens. After your article on tire gardening on roofs (EDN 52-3), I think you could raise worms in the tires, trap them out and plant that tire, moving the worms to a new tire.

"I also had several pickup loads of manure/dirt/hay waste from the horse corral, so I made several larger wooden-sided enclosures, (2x3m) to put this waste in. The worms loved this also, although we were not able to turn it, as it was much deeper (50-60 cm). We are just starting our first rainy season with worms, and it is evident that they will definitely need some kind of roof. I have made 3 smaller beds under a shed roof, and thrown some old metal roofing over the bigger wooden beds outside. I think we will abandon the plastic beds on the ground until drier weather. One of the disadvantages to the environment being wet all around the beds when they are outside is that a certain number of the worms strike out on their own, and without any cover, I think they would actually drown in some of our gully washers!

"The Environmental Education Dept. of the Monteverde Cloud Forest Reserve encourages people to grow organic gardens, to recycle, and to use worms. They have given a workshop to interested locals, well attended by a wide cross-section of the community. The Reserve plans to give out a few worms as starters, and I have also given out several kilos to neighbors.

"The Santa Elena Co-op (Cafe Monteverde) is successfully using the worms to compost the skins and pulp left at their coffee processing plant. Traditionally this is dumped in rivers, and is a large source of contamination in coffee-producing countries. In a recent news program it was stated that 1/2 the coffee processing plants in Costa Rica are now using these worms. At our co-op, the coffee farmers are encouraged to use the compost produced to put back on the coffee patches. We have just started getting results from the first plantings in this compost. So far we are very pleased. The plants given compost are greener and more vigorous even than the plants planted in our organic garden which has had organic matter added every time we plant (depending on the crop 3-4 times a year) for the past 16 years.

"Although the project is a few meters from Stella's Bakery, there is no disagreeable odor. In fact the customers who wander through the hedge and discover the project are usually fascinated. So far we haven't had an excess of worms (except for giving away some starters to neighbors). However I believe that chickens or fish would love them. Paul Vasquez talks of making a solar drier and drying and grinding them for cattle/pig feed and even feeding the compost to tilapia.

"The one predator which has caused problems in this area are flatworms (commonly known as "slugs," which they are not). These animals wrap themselves around the worms and suck them dry. We have only had the occasional one, but a neighbor had a real plague of them (perhaps because she was dumping only kitchen garbage and it got very acidic and smelly, and the worms were sickly). We added a lot of manure and hay waste and started turning it frequently, picking out any "slugs" we saw, and this controlled the situation.

"A very useful book in Spanish is "Manual de Lombricultura" by Carlos Feruzzi (Ediciones Mundi-Prensa 28001, Madrid, 1986). I think it also exists in English. There are several interesting sites on the Web also, some of the ones I have found are http://www.cityfarmer.org (Urban Agriculture Notes) and http://www.applied3d.com/worm ("Worm Digest"). I would be glad to help any way I can either by mail: Apto. 24-5655, Monteverde, Puntarenas, Costa Rica, or by E-mail: rlaval@sol.racsa.co.cr. If any of you are in Monteverde, I invite you to come by and see for yourselves!"

The book *Worms Eat My Garbage* by Mary Apelhof is often referenced in articles on household worm bed production. It is available for US$9.95 plus postage ($2.50 in the USA) from Flowerfield Enterprises, 10332 Shaver Rd. Dept. 109, Kalamazoo, MI 49002, USA; phone 616/327-0108. "Worm Digest" is a quarterly publication for those interested in vermiculture. It often includes stories about worm use in various countries, as well as news and supplies in this area. Contact "Worm Digest", Box 544, Eugene, OR 97440-9998, USA to subscribe. The price is US$12 per year in the USA, US$16 in Mexico, CAN$22 in Canada, US$20 elsewhere.

SIMPLE GRASSHOPPER AND LOCUST CONTROLS. (Summarized from Agrimissio's November 1994 "Notes and Comments.") Grasshoppers and locusts cause extensive damage to a wide variety of crops and can be persistent in gardens year after year. To control these pests, farmers herd poultry through their fields to eat the insects, plant "repellent" bands of sorghum around their maize or millet fields, or keep a permanent soil cover to discourage egg-laying in the soil. Small piles of straw placed around the edges of the fields often serve as night shelters for the insects, where they can be collected and killed. Effective traps include sprinkling baits (like bran with molasses coated with neem or an insecticide) around fields and water-filled pitfall traps with lights hung above them as attractants (like the mouse traps described in EDN 20-1).

Another way to reduce local grasshopper problems is

through careful observation of the insects' egg-laying habits. The females push their abdomens into the ground and lay about 50 eggs 5 cm deep, covering the eggs with a foam. A hoe can bring the eggs to the surface, exposing them to heat and drying out or predation; if eggs are collected, they can be used as poultry feed. By hoeing up the eggs, a community may be able to reduce its grasshopper population by 80-90%.

UPCOMING EVENTS

1ST INTERNATIONAL CONFERENCE ON FOG AND FOG COLLECTION. We mentioned in EDN 50-4 how plastic nets were being used on mountain tops in Ecuador to collect an average of 12 liters of water per square meter per day. A conference on this and other aspects of fog science will be held July 12-24, 1998 in Vancouver, Canada. [That is not a typo; it is really 1998]. The conference organizer, Dr. Robert Schemenauer, writes that "People normally think precipitation is the source of all water used by plants and animals. This is true in many lowland and inland areas .... In upland and coastal ecosystems, on the other hand, trees and shrubs can collect tiny droplets from fog in enormous numbers and this can provide a significant proportion of the water input. Appreciating the role of natural fog collection is vital in evaluating the effects of deforestation on surface and sub-surface water supplies, in planning the reforestation of coastal and upland areas...". Registration fee is US$300. The address is P.O. Box 81541, North York, Ontario M2R 2X1, Canada. Phone 416/739-4606; Fax 416/739-4211; E-mail robertss@armph3.dow.on.doe.ca.

ECHO'S AGRICULTURAL MISSIONS CONFERENCES IN '97 AND '98. To help you do long-term planning, the dates for ECHO's next two Agricultural Missions Conferences will be November 4-6, 1997 and November 10-12, 1998.

TRAINING IN TROPICAL BEEKEEPING. The Njiro Wildlife Research Centre in Tanzania offers a series of workshops and short courses on beekeeping. For example, May 5-10, 1997 is a course on "How to Teach Beekeeping in Africa." It is designed for project and extension workers. The cost is US$940 including food and lodging in "hotels and food of an acceptable international standard." Such fees are out of reach for many in our network; however, fees are lower when the Centre succeeds in getting a sponsor to subsidize the cost. (E.g. "Technical advice and business management for entrepreneurs dealing with beekeeping supplies or bee products" February 10-15, 1997 has a sponsor and costs only $100). Another course ($470) given May 19-21, 1997 is "How can we solve the problem of low productivity in East African beekeeping?" Courses will be held at the research center near Arusha in northern Tanzania. Contact them at P. O. Box 661, Arusha, Tanzania. Phone +255(0)57 7677, Fax +255(0) 57 8242.

BOOKS AND OTHER RESOURCES

THREE SHORT POULTRY TECHNICAL NOTES written by Dr. John Bishop (interviewed in EDN 50) and related to his small-scale poultry production system are available from Heifer Project International. The titles are "Feeding and Breeding the Family Flock," "Protected Free-Range Management for a Flock of Fifty," and "Cost-effective Practices Favoring Small-Farm Poultry Production." Request these two-page notes from: Heifer Project International, P.O. Box 808, Little Rock, AR 72203, USA.

GROUNDCOVER, A PERIODICAL OF THE PERMACULTURE ASSOCIATION OF ZIMBABWE. Elsewhere in this issue we excerpted an article from *Groundcover* on using barn owls to control rats in oil palm plantations. I enjoyed reading the two issues of this quarterly publication that we have in our files. It is an unpredictable mix of ideas concerning useful plants, farming systems, tips for assorted problems common to small-scale farmers, and hints for education and training in schools and other community work. For example, issue 19 had articles on: storing seed without pest problems; suggested notes that seed collectors should keep; intercropping; eight steps to designing a training program; tips for training adults; conserving old poultry breeds; an article about uses of jatropha on the farm; some insect control methods and a few sweet potato recipes. Annual subscription rates are US$7 in Africa and US$10 elsewhere. Write to Groudcover, Permaculture Association of Zimbabwe, Box CY 301, Causeway, harare, Zimbabwe.

ILCA GLOSSARY OF LIVESTOCK AND RELATED TERMS. This English-French glossary is the result of more than 10 years of collective effort by French translators at the former International Livestock Centre for Africa. Major areas covered are agriculture, animal science (animal nutrition, dairy science, veterinary medicine, meat science, animal genetics), agricultural mechanization, soil science, statistics, forages and seeds. Some coverage is given to livestock economics, fertilizers and forestry. African libraries can obtain free copies, others send US$25 including postage. Order from Information Services, ILRI, PO Box 5689, Addis Ababa, Ethiopia.

TRAINING OXEN FOR FARM USE. This well-illustrated 24-page book by Thomas Ahima and James Ogborn is published by Rurcon in Nigeria. It was written as a guide for bullock training centers in Ghana. Readers are referred to other publications for more detailed information. I've never used oxen, so it is difficult to say whether this is everything one needs to know. But it would certainly be a helpful guide for a workshop on the subject.

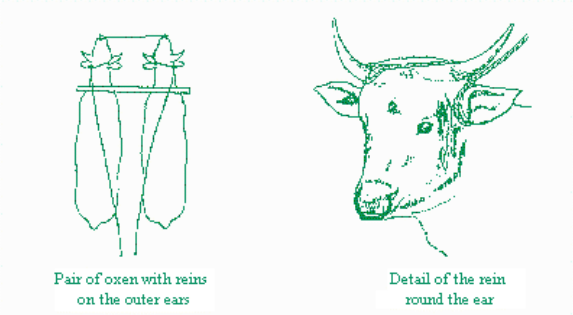
I will excerpt a few items to from the book for your interest.

"When an implement catches on an obstruction, the bullocks are brought to a sudden halt. This can hurt the neck muscles on which the yoke rests. Most experienced operators teach their oxen to stop without orders as soon as they sense the impact of the implement on an obstruction."

"A nylon rope must NEVER be used to catch or tether an ox because the nylon easily cuts into the skin."

According to the book, a simple method to measure the size of a square field is to count the number of steps. A square field 110 steps on each side is one hectare (70 steps is one acre). [Ed.: We calculated and found they must have assumed a stride of 91 cm for this to work out. To personalize this, divide 10,000 by your stride in cm to get the number of steps along each side of a square one hectare in area, then *memorize that number* (6,360 divided by stride length in cm gives the comparable figure for one acre).]

"To avoid damage to the nose, attach the reins to an ear and a horn as in the illustration."



Pair of oxen with reins on the outer ears

Detail of the rein round the ear

The book has an interesting table comparing signs of sickness in people and in cattle. When a man is sick he knows not to work. But how would you know when the ox is not feeling well? Signs of sickness in humans include: body becomes hot, rapid breathing, sleeplessness, loss of appetite, abnormal movements, improper posture, constipation or diarrhoea, coughing, vomiting, catarrh [runny nose], swellings on the body, blood in the urine, etc.

Signs of sickness in cattle include: leanness, hair stands up, keeps behind other cattle, diarrhoea/dysentery (blood in feces), foam in mouth, worms in feces, lack of appetite, watering in eye, external swelling, not chewing the cud, dry nose, coughing, lameness, restlessness, etc.

The book may be ordered for £1.50 (US$2.25) from Rurcon, 4 Churchfield, Wincanton, Somerset BA9 9AJ, England. Nigerians order from P. O. Box 6617, Jos, Nigeria.

SAFETY FIRST: PROTECTING NGO EMPLOYEES WHO WORK IN AREAS OF CONFLICT. I [Daniel Sonke] read this short book in light of ECHO's involvement with a site in Haiti and the increasing political discord there. Written by and for Save the Children staff, I found it to contain practical suggestions for any westerner working in areas of potential danger and those who supervise such staff. Chapter headings include "The Basic Principles of Protection," "Using Aircraft," "Munitions and the Military," "The Threat from Land Mines," "If You Are Attacked," "Evacuating Staff," and "Handling the Media." Available for £9.95 plus £1.50 postage and handling from Publication Sales, Save the Children, 17 Grove Lane, London SE5 8RD, UK.

HOW TO PROTECT YOURSELF AGAINST MALARIA. I [mlp] admire writers who can digest volumes of material, sift out the really important, then say a great deal in a little space. This report, published by the International Association for Medical Assistance to Travellers, achieves those standards. It would be an excellent basis for a staff orientation talk on malaria, as well as a handout to send with them.

Section headings include: The enemy; the bite; the three lives of the malaria parasite (the liver, the red cell, the mosquito); how to avoid the bite; mechanical protection; antimalarial drugs. Half of the report is devoted to the drug section, which covers prophylaxis options and their limitations, special considerations for areas with highly chloroquine-resistant malaria, and discussion of antimalarial regimen in children, during pregnancy, and after leaving the malarial area. Here are a few items I found especially interesting:

The mosquito sits quietly in a dark corner of the house, waiting. At some point between dusk and dawn she flies directly and silently to you, often after midnight. She does not hum or hover as other mosquitoes do. After feeding she flies to a dark corner of your room for 48 hours to digest the blood, then flies away to deposit her eggs. "She may return to you the same night. During her three-month life span she may lay up to three thousand eggs." The usual flight range is a few hundred yards to a mile.

Habits of different species of *Anopheles* mosquitoes can make great differences in malaria patterns between countries. For example, in Africa the mosquito likes to breed a few yards from one's house. In the Philippines she prefers to breed along the margins of foothill streams and lakes. "That is why, though there is no malaria in large cities like Manila, there is malaria transmission in African cities south of the Sahara." "Lower temperatures will decrease the Anopheles population and, more important, will arrest the development of parasites in the mosquito gut." This is why malaria in not a problem at higher altitudes.

"It is never advisable to take medication during pregnancy. However, if travel to malarious regions cannot be avoided, the risk of miscarriage or premature delivery [from] malaria far outweighs the risk of possible [drug side effects]. Chloroquine and proguanil are considered safe during pregnancy in doses used for malaria prophylaxis. Pregnant

women should not travel to chloroquine-resistant areas."

We were curious to know more about the group that prepared this document, so we called its president, Ms. Uffer-Marcolongo. It is a non-profit membership organization called the International Association for Medical Assistance to Travellers, IAMAT. They have offices in four countries. They specialize in health-related issues facing international travellers. They publish several reports: the format is unusual but convenient (a 24-inch sheet of high-grade paper folded to the size of an office envelope). They also have a booklet listing physicians in many cities who have agreed to treat members at negotiated rates.

Other reports they sent us cover Chagas' Disease, Schistosomiasis, World Schistosomiasis Risk Chart, World Malaria Risk Chart, and the World Immunization Chart. Their 24 World Climate charts (available for a minimum donation of US$25) cover hundreds of cities giving average high and low temperatures, rainfall and relative humidity for each month, recommendations on water and milk safety and other information. In the future, we intend to make sure ECHO staff going into affected areas have the relevant reports, especially malaria and Chagas' disease.

For more information, write IAMAT, 417 Center Street, Lewiston, NY 14092, USA; or 40 Regal Road, Guelph, Ontario N1K 1B5 Canada; or P.O. Box 5049, Christchurch 5, New Zealand; or 57 Voirets, 1212 Grand-Lancy-Geneva, Switzerland; home page http://www.sentex.net/~iamat. They have no set charge for membership or material, but do appreciate a donation.

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