

EDN ISSUE 31. DECEMBER, 1990

31-1 THE VIDEO SERIES ON TROPICAL FRUITS IS READY! Dr. Carl Campbell is well known to readers of EDN. His answers to your tropical fruit questions have appeared in many issues. Until his recent retirement, Carl was professor of tropical fruit at the University of Florida, responsible for teaching, research and extension. He is also known to many Floridians for his popularity on the speaking circuit at the many tropical fruit clubs in this State. His knowledge of and enthusiasm for the subject of tropical fruit is contagious.

Imagine standing under a mango tree with Carl while he shared the most interesting and helpful things he knew about mango. Then going to other trees and doing the same thing for 10, 20 or 30 minutes: avocado, canistel, loquat, macadamia etc. I had this privilege during four different seasons last year, videotaping his discussion. ECHO intern Mary Cockram, a communications and agriculture graduate of Cornell, then spent hours editing it down to approximately 8 hours of teaching. Now you too can meet Carl under some his favorite trees!

The first tape in the series, called "Introduction to Tropical Fruit," was made last. We found that people coming to ECHO to study before heading overseas were so unfamiliar with tropical fruits that they did not even know it was a subject they should want to learn about. I must admit that 20 years ago, when reading the account of Adam and Eve in the Garden of Eden, I would envision them eating apples, pears, cherries and other temperate fruits. Most Americans would be hard pressed to even name a tropical fruit other than banana, pineapple, mango, and avocado. So we asked Carl to put together a 70 minute slide presentation. Fruits of the lowlands, middle elevations and then high elevations are discussed in order, each divided into major fruits, lesser known fruits with considerable potential, and locally important fruits. Every time I see it I am not only enthused again for the potential of tropical fruits in development projects, but am struck with awe at the richness of the world God has created for our joy and benefit.

The only other tape that was not made "standing under the trees" is the one on papaya and coconut. Carl's discussion of these two fruits is based around a series of slides.

The tape on grafting tropical fruit will be of special interest to many of you. Closeup photography and Carl's running comments show several of the most useful grafting techniques. After viewing this tape a few times, then getting some hands-on practice, you should have a powerful new tool for your ministry. You can use the tape in teaching if you provide the commentary in the local language.

TAPE # 1 -- (73:03 minutes) Introduction to Tropical Fruit.

TAPE # 2 -- (81:58 minutes). Part I. Grafting Tropical Fruit (60:08 minutes); Part II. Avocados (21:50 minutes).

TAPE # 3 -- (85:13 minutes). Part I. Guava, pineapple and macadamia (34:30 minutes); Part II. Mamey sapote, sapodilla, eugenia family, jaborcaba, velvet apple, black sapote, white sapote, white mombin, strawberry tree (50:43 minutes).

TAPE # 4 -- (79:02 minutes). Part I. Atemoya, passion fruit, inga, loquat and naranjilla (29:15 minutes); Part II. Akee, tamarind, jujube, carissa (21:16 minutes); Part III. Carambola, canistel, monstera, barbados cherry (28:31 minutes).

TAPE # 5 -- (69:12 minutes). Part I. Mangoes (40:00 minutes); Part II. Papaya, coconut (29:12 minutes).

TAPE # 6 -- (67:36 minutes). Part I. Banana and jackfruit (26:00 minutes); Part II. A conversation with Carl Campbell about tropical fruit and development (41:36 minutes) .

[NOTE : These videos were uploaded to YouTube]

31-2 PLANT TISSUE NUTRIENT TESTS AVAILABLE AT OHIO STATE UNIVERSITY. This technique is more sophisticated than most of you will require, but readers do occasionally ask us where they can get leaves of a plant analyzed to see what nutrient is causing a certain symptom. "Are the leaves yellow for lack of nitrogen or iron?" The theory behind this technique is that the ideal place to look for a nutrient deficiency is in the plant itself, rather than the soil. For example, even though a soil test might show that a particular nutrient is present in the soil in adequate amounts, a deficiency of that nutrient could still be causing the deficiency symptoms if for some reason (e. g. high pH) the plant could not take it up. A foliar spray with that nutrient might solve the problem.

I read in a newsletter that the Ohio State University experiment station offers this service at a good price. I wrote asking how one could get soil or plant material into the States for analysis. Professor Maurice Watson said you need to obtain a customs permit number from them, then send samples to them directly for analysis. No doubt many other Land Grant Universities offer similar services.

The standard plant tissue analysis for nitrogen, phosphorus, potassium, calcium, magnesium, manganese, iron, copper, zinc and boron costs \$10.00. The standard soil test for pH, lime deficit, available phosphorus, exchangeable potassium, calcium and magnesium, cation exchange capacity and percent base saturation costs \$5.00.

If you have been mixing your own animal feed rations, you might also be interested in their feed analyses, although some knowledge of animal science would be necessary to interpret the results. Dairy feed standard analysis will measure dry matter, total crude protein, phosphorus, potassium, calcium, magnesium, sodium, manganese, iron, copper, zinc, neutral detergent fiber, estimated sulfur, and estimated energy for \$21.00. The beef feed analysis (\$20.00) is the same except it measures acid detergent fiber and does not estimate energy. Swine feed analysis includes dry matter, total crude protein, potassium, calcium, magnesium, zinc, manganese, copper and iron for \$23.00.

Write the Ohio State University, R. E. A. L.; Ohio Agric. Res. & Development Center; Wooster, OH 44691, USA. Prices quoted were in effect November 1989. Be sure to write them for current prices, detailed instructions on how to take samples, how much to send etc. before submitting any samples.

31-3 SEED FOR TWO COMMERCIAL LABLAB BEAN (DOLICHOS LABLAB, ALSO CALLED LABLAB PURPUREUS) VARIETIES READY FOR TRIAL. Lablab beans are one of the "big three" green manure crops that our readers have been requesting since Roland Bunch's articles in EDN 12-3 and 20-5. Because so many of you are now growing lablab beans, we thought you might like to compare their growth to two top commercial varieties in Australia. We purchased varieties "Rongai" and "Highworth" in bulk from the Yates Seed company and repackaged them for our network. (Free to our overseas network, \$2.50 to others including postage.

Here is how the Yates catalog describes the two. Rongai was derived from the original introduction of lablab from Kenya in 1952. It was released in 1962. It has white flowers and brown seeds. Highworth came from southern India. It was selected from a large range of lines for its early flowering, high seed yield and satisfactory dry matter production. Both varieties have similar vegetative growth, but Highworth flowers are purple and the black seeds are slightly smaller. Flowering begins 3-4 weeks earlier than Rongai

in northern Queensland and up to 6 weeks earlier in Central Queensland. Pod maturity of Highworth is more uniform and because the pods are borne well above the foliage, seed harvesting is simplified and seed yields are higher.

31-3 FRESH SEED FOR THE "BETA III" (HIGH CAROTENE) CARROT IS AGAIN AVAILABLE. Dr. P. W. Simon with the USDA at the University of Wisconsin has sent us one pound of the best high carotene (i. e. high vitamin A) carrot they have developed. This same carrot was offered earlier in EDN 16-3 when it was an experimental variety. The new seed was grown by the Asgrow Seed Company, which produced seed in quantity for larger trials, but not yet for resale.

(I realize that most of you will not attempt to produce your own seed. For you, this trial will only be worthwhile if, should your trials turn out well, you will be able to purchase seed in the future. I asked Dr. R. C. Bowers at Asgrow what to expect. He is sure that the carrot will not be commercially grown in the States, except perhaps for the health food market. Only time will tell what interest develops overseas. He was reasonably confident, but gave no promises.

We can send a free packet for trial to our network (\$2.50 including postage to others). We also have purchased and repackaged some bulk seed for the first high carotene carrot that was released, A Plus (EDN 12-1). You might want to include A Plus in your variety trial because it is available in many retail catalogs, e. g. Park Seed Co.; Cokesburg Rd; Greenwood, SC 29647, USA.

Dr. Simon writes, "Vitamin A is necessary for normal vision and eye health, mucous membrane and skin health and disease resistance. A U. S. nutrition survey indicated that 40% of Spanish Americans, 20% of blacks and 10% of whites suffer from vitamin A deficiency. On a global basis, it is claimed that after total energy deficiency and protein deficiency, vitamin A is the most common specific dietary deficiency, causing night blindness, permanent blindness and even death."

In developing countries, 90% of the vitamin A is typically from plants. The body converts carotene from the plants into vitamin A. Excess consumption of Vitamin A itself is toxic, but the body regulates the carotene-to-vitamin A conversion so that toxic amounts of vitamin A are not produced, even when high amounts of carotene are consumed.

The Beta III carrot contains three times as much carotene as typical carrots. "To completely fulfill adult vitamin A needs with Beta III, 140 average sized roots (11 kg) would be required per person per year. This would require approximately one square meter of land."

Here are some other interesting comments on Carrots from Dr. Simon. Carrots tend to be less sweet if the night time temperatures are high, if light intensity is low and if there is a lot of organic matter in the soil. Store under refrigeration (or delay the harvest). Do not store in a sealed plastic bag, since they need to "breathe" and will spoil. Do not store carrots near apples or pears, as the ethylene gas that these fruits emit will cause the carrots to become bitter. Carotene is relatively stable during processing -- between 5-20% of it is lost when canned.

Dr. Simon says, "The major problem with the Beta III is its long thin "imperator" shape, in contrast to the short broad roots grown everywhere else in the world but in the U.S.A." His present research is looking for the short, broad root shape and even higher carotene content. He is also looking into solving the difficult problem of carrot production in the lowland tropics.

This brings me to another important topic: can you grow your own carrot seed?

31-4 HOW TO PRODUCE CARROT SEED WHERE WINTERS ARE NOT COLD. We often hear from people in our Third World network who want to do gardening projects. Often they are frustrated because seeds are not available in local stores or people cannot afford the seeds.

We have become so dependent on seed companies that we forget they have only been around a century or so. Except for situations where weather interferes with the harvest, there should be no need to purchase seed for any non-hybrid vegetable that produces seed in your garden. Just save your own seed. (Seeds saved from hybrid plants usually give unsatisfactory results, which is why we do not recommend hybrid plants for most situations. Because it is difficult to tell if a seed-containing vegetable in the local market has been grown from hybrid seed, it is safer to start with known non-hybrid seed. On the other hand, local produce may have been grown from especially well adapted varieties passed on from generation to generation, so it may be worth a try.)

There is a tendency for people who grew up in temperate climates to think only of vegetables that were popular there. Do not forget that the bulk of vegetables in a tropical garden should probably be what I refer to as "plants that God created for that climate." However, the temperate vegetables are good and often bring premium prices if a way can be found to obtain seed and to grow them.

Not every temperate vegetable will produce seeds in the tropics. If the following grow in your community, you should have no problem saving your own seed: pumpkins, squash, egg plant, cucumber, lettuce, peppers, corn, radish, or tomato. You will probably need to purchase onion, leek, carrot, kale, beet, and cabbage seed.

However, if you are willing to do some extra work, there is a way to produce carrot seed in most climates where carrots will grow. The Beta III is not a hybrid, so you can use it to produce your own seed. The following is abstracted from a bulletin provided by Dr. Simon.

Carrots do not produce seed in the tropics because they are biennials. Carrots need two growing seasons with a period of cold (vernalization) in between. To produce seed, first grow plants and harvest roots as you normally would. Discard or eat any that are not "ideal" carrots. Pencil sized roots will do, but larger roots are preferable.

Trim the tops back to 2-4 cm, trim off lateral and fibrous roots, gently wash off the soil, and remove any yellowing leaves. Let the carrots dry on a shelf out of the sun until no surface moisture remains, pack in paper bags with an equal volume of wood shavings, and place in closed polyethylene bags in the refrigerator (2-5 C). After several weeks when water droplets accumulate inside the plastic bags, puncture the bags.

Even with all these precautions, carrots are very susceptible to infection during storage. In commercial production the roots are dipped in fungicide before vernalization, but this can be dangerous unless you are CERTAIN that no one will be tempted to eat the carrots.

The next season plant the vernalized roots, taking care to keep them well-watered but not in standing water. Seed stalk development will be evident in 4 to 6 weeks. It is very difficult to produce carrot seed where warm humid climates favor microbial growth. Control of fungal diseases and insect pests is essential. If the wild carrot, queen anne's lace, grows nearby, it will cross and yield white-rooted plants.

Pollination is by bees or flies. Alternatively, pollen movement is possible by hand or brush, but seed set will often be low. Within 4-6 weeks after pollination the developing seed turns brown. Before the seed shatters, harvest and place into paper bags to dry completely. If rains occur just before harvest, the yield of seed can be reduced drastically. Perhaps you can adjust planting time to increase the likelihood of dry weather while seeds are ripening. Remove spines from dry seed by rubbing. Because carrot seed requires no dormant period, the seed is now ready to plant. Store dry seed in a moisture-proof container in a refrigerator if possible.

31-5 UPDATE ON APPLES FOR THE HIGHLAND TROPICS. We became acquainted with Jim Abbott in 1982 when we were looking for someone willing to give attention to small overseas orders. Some of you will remember the "bench grafted" apple trees that he offered some years ago. These apple roots with scions grafted to them were so small that up to 30 could be shipped in a package the size of a shoe box. There were a few successes, but most shipments had died in transit.

I called Jim for an update. He has had better luck with bench grafted trees that were ordered in sufficient quantity to ship by air freight (faster than regular airmail). However, several of them still have died within a few months.

Now he prefers to dig up established but quite young trees, much younger that would be dug for domestic shipment. Typically he chooses plants 12-18 inches tall that were budded in May or July and dug in the winter. They are still small enough that a person could fit 100 trees into a suitcase.

Advance planning is essential, even with small orders. Jim likes to begin correspondence early in the year, but can only ship when the trees are dormant (mid-December through March). If you travel to the States, it would be ideal to talk with him by phone. Whenever possible it is best to transport the trees in a suitcase when returning home or when someone is visiting. Otherwise there may need to be an exchange of letters to determine just how the trees are to be shipped and how many dollars to send him in advance to cover shipping -- which can be more than the price of the trees. Jim figures that the maximum safe time for trees to be in the mail is a couple weeks. The trees themselves are \$2.50 (They would be less if you are ordering several hundred, but unless apples are already proven in your area I would hesitate to start with that many).

Jim can provide a phytosanitary certificate if requested. You will need to check with your government to obtain any necessary permits for importing trees. A very small hand-carried or mailed package might be allowed into some countries, but the risk of a large, expensive shipment dying in customs is too great to not do your homework first.

Recently Jim has sent fairly large orders to Ethiopia, and 28,000 trees to Honduras where a Japanese project has built a cooler to keep trees dormant until planting season. In Honduras (I believe at about 7,000 feet) the Excelsior plum and hood pear are also doing well. Chet Thomas wrote that the trees in Project Global Village's planting high in the mountains in Honduras did not need to be defoliated to blossom. They seemed to bloom frequently, even while apples were ripening on the tree. I heard the same thing from a site in Rwanda. Jim reported that blueberries are apparently doing well at one site in Honduras.

So what should you do? (1) I hate to ever say "never," but I would not bother with subtropical "temperate" fruits at elevations less than 3,000 feet (1,000 meters) . The cutoff elevation will be higher near the equator than at higher latitudes. Islands may have more moderate climates than sites well inland on continents. If I was at 6,000 feet I would begin to think of subtropical "temperate" fruits very seriously. (2) Write to Jim Abbott or manager Danny McHone early enough to allow a few exchanges of correspondence. He will need

to have payment for trees and shipping in advance. The address is Abbott's Monticello Nursery, 1220 Mahan Dr., Monticello, FL 32344, USA; Phone 904/997-5695. (3) If you want them to come airfreight, how is word to be gotten to you quickly that they have been sent? It is much easier if you or a friend can hand-carry the trees. (4) Start small.

[In case you are wondering, ECHO does not receive a commission from Jim! We are just grateful to find someone who will take the time to handle small and not very profitable orders.]

31-5 ENGINEERING MINISTRIES INTERNATIONAL (EMI) PROVIDES FREE ENGINEERING HELP TO CHRISTIAN MINISTRIES. When Kinney Mitchell in St. Kitts mentioned that EMI had been a great help to them in a recent building project, I decided it was time to get an update. EMI has grown since we last mentioned them in EDN 3-5. They can now point to completed projects in 21 countries.

"Projects vary from a small chlorination system for an orphanage in Colombia, to master plans and building designs for an orphanage complex in El Salvador. ... We have designed water and sanitation systems, bridges [including foot bridges], roads, airstrips, buildings and electrical generation and distribution facilities."

When a request from a Christian agency has been approved, engineers with the required skills are recruited. Volunteer EMI engineers pay their own airfare. The host organization covers meals, lodging and local travel. The finished product will be architectural drawings, an engineering report and cost estimates. You can use these in fund raising and then actual construction.

They list three project criteria. (1) The project must minister to the needs of the poorest of the poor. (2) There must be a direct and ongoing proclamation of the good news of Jesus Christ. The project should have some specific relationship to that proclamation. (3) There must be some realistic method of funding or building the project after the design is complete. Their address is 110 S. Weber; Suite 104; Colorado Springs, CO 80903, USA.

31-6 ECHOS FROM OUR NETWORK. Doug Welch, Malawi. "Velvet beans are consumed here. They were displayed at the trade fair as one of the beans produced for consumption. There is a story of how villagers fled when attacked and left some partially cooked velvet beans. The hungry raiders ate them and all died. They have to cook the beans twice."

Dr. Hal Reed, an entomologist at Oral Roberts University, has a correction related to the review of the book on Africanized bees (EDN 28-7). "The review states that the Africanized bees readily interbreed with honey bees of European ancestry. This is not entirely correct. The recent evidence published in Nature and discussed at the recent national Entomology meetings indicate that very little interbreeding is taking place between the European and African strains. Indeed, researchers feel that the leading edge of the invasive population in Mexico is almost purely African, like the original bees introduced in Brazil. There is disagreement about the degree, if any, of interbreeding." ECHO can send a copy of the article if you have a special interest in this problem.

Dr. Eduardo Schroder, Puerto Rico. "In EDN 29 you mentioned our publication Pigeon Pea: a Valuable Crop of the Tropics. It is still available and can be purchased for US \$7.00, including postage. We have a similar book on mung beans at the same price. Order from Dr. Eduardo Schroder; BNF Laboratory; Dept. of Agronomy and Soils; Univ. of Puerto Rico; Mayaguez, PR 00709-5000."

Lloyd Rowlands, Zaire. "Another thing I am trying is *Acacia augustissima*. It out-performed 10 other species of trees from our NFTA trial (Nitrogen Fixing Tree Association). After 2 1/2 years it is 5 meters tall and about 6 cm thick! It is far better than *leucaena* in this area. I want to try incorporating it into an alley-cropping system. [Ed: In alley cropping, crops are planted in "alleys" between rows of trees that are planted a few inches apart and kept cut back to a few feet in height.] I have no other information on the species. Even NFTA, who sent the seed, has little information." (Neither does ECHO).

"The trial also included *Acacia auriculaformis*, *A. melanoxylon*, *A. mearnsii*, *Calliandra calothyrsus*, *Casuarina cunninghamiana*, *Chamaecytisus palmensis*, *Leucaena diversifolia*, *Mimosa scabrella* and *Sesbania sesban*. Due to drought, weeds and termites, only the first 5 species survived two years. After planting, the trees received no special treatment, as I was trying to do nothing that local farmers would not provide."

Lloyd just wrote again. "About 5 weeks ago a fire swept through the trees. Although all were killed above ground, *A. augustissima* are re-sprouting from the base and already average 55 cm high. Some are almost a meter tall. "This would seem to indicate that this species has good coppicing ability [Ed: ability to resprout from the base]. So they should be well suited to an alley cropping system.

"*Calliandra* is showing some signs of recovery with some shoots about 10 cm tall. Some nearby *Leucaena leucocephala* trees also burned. These are showing very poor signs of recovery.

"I cut down one tree. The wood is very hard, difficult to whittle with my rather sharp knife. I expect it will make good firewood or charcoal."

ECHO has not been able to come up with much additional information, but we received a few seeds from NFTA and some from the International Livestock Research Center in Ethiopia. We will hold your requests for a couple months until we see how many small packets we need to make from the few seeds we can share. Seeds must be "scarified" by placing in hot water in the morning and left there while it cools and perhaps most of the day. Seeds are available only to our overseas network.

31-7 FOR YOUR INTEREST ONLY. Nearly every item in EDN is screened for its potential immediate usefulness to our readers. "For Your Interest Only" will be a heading for those occasional items I come across that are so interesting I want to share them even if you will not be able to put them to use.

Have you ever thought how frustrating it would be to be a graduate student in plant breeding studying bamboo? You could only make the crosses between varieties when they flowered. In bamboo, flowering occurs most commonly after 30 years, but can be on other multiples of 15, even 120 years for different species. Then there is the problem that the two varieties you wanted to cross might not flower at the same time. That is why this terribly important plant has never been improved by plant breeding.

Dr. Larry Butler at Purdue University alerted us to a breakthrough ("Nature," vol. 344, p 291, 1990). Researchers have found that "tissue cultured shoots from bamboo seedlings on medium supplemented with cytokinin [a plant hormone] and coconut milk flowered ... after only three subcultures." The varieties they work with would normally flower after 30 years. Similar advances have been found with other species. For example, date palm shoots can be made to flower in five months after tissue culture rather than the usual 9 years.

There should now be "an explosion of new types [of bamboo]...". There is plenty of variation to choose from in making crosses. "Leaves, for example, vary between species from great sheets 4.15 meters long and

30 centimeters wide (on a plant only 3 meters high) to hair-like threads." "Bamboo hay has four times the protein content of hay from grasses and paper from bamboo is much better than newsprint."

31-7 SOME REFLECTIONS No doubt the word "hunger" in our name leads people to think of hunger as ECHO's only concern. ECHO is involved in much more than alleviating hunger. I often tell people that even if no one was dying of starvation in the world, ECHO would still be ministering to the poor in the name of Christ. So would most of our readers. There is much more to life than not dying of hunger! It is the quality of life that is our concern, spiritual and physical -- the same things for which we all work and pray for ourselves and our families. The following condensation from a letter forwarded by former ECHO Board member Mel West is an eloquent example of this greater need. (Mel says that Cesar Maes is a Belgian Catholic Priest in Guatemala.)

"Our new fish pond is a source of joy. How important is entertainment for development projects? How important is it in the lives of well-off people? A project that only takes the stomach into account is crippled right from the start. There is more in a human being than a stomach and one can still feel hungry in many ways even being well fed.

"Don Tomas had to wait 75 years for an opportunity to see fishes. He showed his plastic bag with some colored little carp. 'Look, Padrecito, how beautiful!' And he hurried home to his water pit. There are hundreds of pits and miniponds in a wide environment and uncountable are the children and adults having lots of fun with them. The fact that several carp are already the size of a frying pan increases the enthusiasm. People tenderly look at the fishes. They smile, and believe in God. Wonder is the most intimate relative of faith.

"Humble people dream around the fish pond. It took a lot of time to remove hundreds of tons of dirt, using wheelbarrows and primitive implements. It was worth-while. They had never seen swallows skimming the water, never felt the sensation of a quivering fishing rod when a fish wriggles at the hook, never seen a water lily, never miraculously stayed dry floating on water [in a boat]. Their delight is our joy. The model farm becomes with this huge pond an entertainment area especially for families. It is the only one in our highland.

"Healthy entertainment is scarce. This partially explains the alcohol abuses, the sexual deviations and the vulnerable family ties. It also explains the successful religious meetings where they do a lot of singing, usually mishandling guitars."

31-7 HOW TO MAKE A ROPE AND WASHER PUMP. Robert Lambert wrote this 27 page booklet for the Intermediate Technology Development Group. The manual shows how to make a simple, cheap pump suitable for small-holding and garden use. The pump, which can raise water up to 6 meters (18 feet) from a stream, pond or well, has been field-tested in Tanzania and Zimbabwe. An output of 1 liter per second at 5 meters can be sustained, enough to irrigate 1/4 hectare if pumped 20 hours a week.

It is designed especially for irrigation of small plots. Providing "supplementary irrigation to crops at critical periods of growth can greatly increase the yield ... [or even] make the difference between a good crop and total failure." It is "particularly valuable for vegetable production in the dry season when vegetables may be grown only through the use of irrigation. [And prices received will be higher]."

"The rope and washer pump is ... capable of lifting relatively large volumes of water from a water hole or well to its own height [but no higher]." "A rope is pulled up through a pipe by means of a pulley wheel [an old tire]. Fixed to the rope are flexible rubber washers [cut from a tire] whose diameter is slightly less than

the internal diameter of the pipe." As the washers are pulled up through the pipe "water is drawn up and discharged at the top. The rope and washers pass around the pulley wheel and return to the bottom of the pipe."

Every moving part is out in the open and can be hand made with simple tools. The cost of materials in Zimbabwe in 1989 was US\$30.

A video tape is also available. I cannot review the one I purchased because I forgot that England used a different video system than we do. However, the booklet is so profusely and well illustrated that I see little need for a video.

Order from Intermediate Technology publications; 103/105 Southampton Row; London WC1B 4HH; United Kingdom. The price is \$7.50 plus \$2.80 postage in the USA, \$3.75 elsewhere.

31-8 **CAN YOU HELP US?** (1) We often receive requests for leguminous green manure crops for areas too high for our "big three" to thrive: velvet bean, lablab bean and jack bean. Milton Flores with the International Cover Crop Clearinghouse in Honduras (see EDN 23-5) has shared information he received from Guatemala about "choreque," *Lathyrus nigrivalvis*. It is grown in the Department of Chimaltenango. If any of our Guatemalan readers are familiar with choreque we would like to know more about it. If you can supply anywhere from a tiny packet to a pound or so of seed, write for our import permit.

(2) According to a USDA press release, young ticks died and adult ticks shied away when they touched extracts from an African plant, *Commiphora erythraea* (Haddi tree). A syrupy oil bearing the chemicals was made from the thick gum of the plant. "In Africa, the oil is rubbed on cattle to repel ticks and insects and soothe cuts, bruises and scabies. It is also used as a perfume because of its pleasant odor. The plant is closely related to myrrh, known for its Biblical reference as a gift of one of the wise men." We have been unsuccessful in obtaining seed for this plant, or even to learn any of its common names. Can anyone in Africa help with information or seeds?