

EDN ISSUE 33. JUNE, 1991

33-1 SWEET POTATO CULTIVARS AVAILABLE. Last year we grew and compared several of Dr. Frank Martin's sweet potatoes, both the non-sweet (EDN 28-6) and sweet varieties. We selected six superior cultivars based on a combination of traits, including: uniqueness (not available elsewhere), yield, sugar content, ease of processing, texture, shape, color, time to maturity and reliable yield. These are the ones we will distribute from now on.

Cuttings are typically available July through October. Please send \$5 to help with postage and handling if that is possible. Since the danger of introducing a new disease or insect is so much greater with fresh plant tissue than with seeds, we will only send them after receiving a government plant import permit from you. Be sure to designate which varieties you would like. If a phytosanitary certificate (certified disease and insect free) is required by the permit, enclose an additional \$10 per order (see next Note.)

(If you use a USA address, check with us first. Many states in the US have restrictions on shipping sweet potatoes into the state.)

Varieties selected were: "Topaz" (orange and sweet, closest to typical US varieties but 50% higher yielding for us, somewhat less uniform, some drought resistance; "Ivoire" (non-sweet, "Irish" potato substitute, very dry if harvested after 12 weeks); "Viola" (purple skin, white flesh, sweet, good flavor, has done well everywhere); "Colorette" (low in sweetness, high yielding, light orange flesh, light purple outside); "Suabor" (large, sweet, smooth, early maturing, yellow when cooked); and "Toquecita" (good yield, white skin and flesh, sweet, large tuber, but highly lobed, excellent for processing).

33-1 WHEN YOUR PLANT IMPORT PERMIT REQUIRES A PHYTOSANITARY CERTIFICATE. These certificates are issued by a government plant inspector certifying that he/she has visited the farm, seen the plant material and that it is disease and insect free. These are most likely going to be required for shipments of live plants or cuttings. We must pay the inspector \$10 plus \$4 for mileage for the certificate, so please enclose that amount with any order requiring it.

Like many universities, ECHO has an "unofficial" phytosanitary certificate in which we certify that, to the best of our knowledge, seed came from disease-free and insect-free plants and that the seeds have been treated with insecticide and fungicide. If requested, we enclose this with seed orders large enough to require a package. If you believe this certificate would be helpful you can request that we enclose it. However, it will not be enough with higher-risk imports, such as cuttings or roots of sweet potatoes, and certainly will not suffice if your import permit requires an official phytosanitary certificate.

33-1 KINNEY MITCHELL REPORTS ON HIS EXPERIENCE WITH RABBITS IN ST. KITTS. For some years I have followed Kinney's work with rabbits, which turned out to be quite a successful project. He kindly wrote up some highlights from his experience.

"We tried three basic diets. Rabbits fed 50% pellets and 50% green matter did best. Those fed only locally produced commercial pellets did second best. Those fed only greens suffered some losses due to feeding improper materials, but as a whole survived and grew but did not grow as fast.

"Many locally grown things that are considered rabbit feed turn out to be very harmful to rabbits. A healthy adult rabbit begins to suffer when these traditional bushes are introduced.

"We fed velvet bean, leucaena and banana leaves. Others added sugar cane tops, grasses and sweet potato and black eye pea (cowpea) vines.

"Most of our rabbits preferred velvet beans over other leaves (sweet potato, black eye pea, or green bean vines) or pellets, though a few preferred banana leaves. Bunnies began to eat the velvet bean leaves as soon as they could hop out of the nest box. We never had trouble from rabbits eating velvet bean leaves. They also ate the vine part. By the way, when cutting the velvet beans a brown stain got on my hands and clothes. This usually washed right off. [Editor: I stained my shirt with velvet bean vine and did not wash it off immediately. My wife, who excels in removing stains, could not save the shirt. Sweet potato vines will do the same thing.]

"We planted the velvet beans around the outside of the rabbit barn. They grew up the sides and actually covered the top of the barn. The shade helped keep the rabbits cool. The vines lived 3 years and grew vigorously, in both the hot and dry season. While we were heavily harvesting the leaves they would not make beans, but made tons of leaves. [Editor: Supposedly velvet bean vines die after the seeds mature. The lack of seed production is probably why these lived so long]. I guess the manure from the rabbits made them grow so well. Mice began to live in the leaves, but our cat kept them under control. We harvested the vines that hung over the front of the barn, and from the back and sides as they became too thick.

"Our barn is made from split bamboo for a roof. Once the velvet beans covered the roof, it was quite water tight and cool. We placed bamboo around the bottom to a height of 2 1/2 - 3 feet to keep out dogs and wire fencing on up to the top to keep out other things. The bamboo lasted 3 years.

Our rabbits really liked the leucaena. They would eat the leaves and tender green stems and would also chew on the wooden stems. They seemed to enjoy pulling the soft bark off to eat and then chew on the wooden parts. We fed a lot of leucaena and never saw any problems, such as hair loss which is a reported problem with non-ruminants.

"Our leucaena are all improved types. Rabbits would also eat the dwarf wild leucaena that grows here if they were hungry, but it seems bitter and they did not like it very much. The improved leucaenas were preferred over pellets. Bunnies would also eat it as soon as they left the nest.

"Rabbits also liked banana leaves, which my tropical agriculture book says are very nutritious. The mature rabbits also liked the center part of the leaf, which has a celery-like texture. I cut the leaf away from the center part, then split the center 3/4 of its length. I could then hang these from the top of the cage so I did not need to worry about them getting soiled. Rabbits had to be very full not to eat all of them quickly.

"Rabbits also like the moringa (*Moringa oleifera*), and winged bean leaves, though we did not have enough of either to be very important.

33-2 "SOME PROBLEMS WE ENCOUNTERED. 'I don't want to eat rabbit.' We invited 40 young adults from our Sunday school class for a party at our house and served rabbit -- fried, baked, BBQ'd, stewed with tomato and rice, rabbit with rice, and rabbit salad. Everyone ate heartily -- over 30 rabbits. After that we never had to worry about people being willing to eat rabbit. It is now a special meat for holidays and special occasions. I recently had to make 40 pounds of rabbit salad for a wedding reception.

" 'Rabbits do not need water.' The common belief here is that animals (cows, sheep, goats, rabbits) get all the water they need from the grass and leaves that they eat. Some time after the class for new rabbit raisers, one said to me, 'Brother Kinney, you cannot believe how much better my rabbits do when I give them water.' I told him his milk cow would give more milk too if he watered it -- and sure enough it did.

" 'Rabbits can survive on local brush.' As mentioned earlier, those that ate a lot of local bushes soon got sick and died. Rabbits that did not prospered and got fat. The smart raisers noticed the difference and changed their ways. The others would not listen to advice and soon had no rabbits.

" 'Rabbits will not grow in St. Kitts. They get diarrhea and die.' This belief has come about because of poor diet and a poor local strain of rabbit. The main rabbit raiser had a sickly, inbred strain. After he replaced his herd with our rabbits and changed his feeding, the diseases went away. We have a rule that if a rabbit gets sick, kill it. We do not try to doctor them. We do not want to keep sick rabbits around nor pass on any genetic susceptibility to disease. We have raised over 500 rabbits and butchered 300-400 more. During this time we lost 1 to mastitis (infected mammary gland), 1 to an unknown disease, 1 broke its neck during a thunder storm (and several mysteriously opened their cage door, jumped out and re-latched the door). We started with 6 unrelated females and 2 unrelated males. The next year we added the same number of unrelated rabbits. We tattooed all the breeding animals and kept careful records so as not to interbreed."

33-3 FIVE YEARS OF HEIFER PROJECT EXCHANGE IN BOOK FORM. As we said in EDN 5-4, this newsletter is well worth having if your work involves animals. The first 5 years (1985-1989, 26 issues) are available in book form for \$15, including postage and the right to obtain up to 10 of the free reprints that were reviewed in various issues. Current subscriptions are free. Write Heifer Project Exchange, P. O. Box 808, Little Rock, AR 72203, USA.

33-3 BUSINESSMAN LOOKING FOR UNIQUE OIL SEEDS. James Brown, the president of the Jojoba Growers and Processors Inc., sent me the following note. "We are a specialty oil manufacturer seeking sources of unique vegetable oils to introduce into industrial applications. For initial trials we are interested in receiving 1-2 kg of unique oil bearing seeds that might be later supplied in ton quantities. We are particularly interested in obtaining seed of pajura de mata (*Parinarium montanum*) from Brazil and French Guiana. Perhaps we can help stimulate some economic activity in the areas of your readership." If you have a good candidate and are looking for larger markets, you can write him at 2267 South Coconino Dr.; Apache Junction, AZ 85220, USA. Phone 602/982-1125.

33-3 AN AUSTRALIAN COMPANY WITH A HUGE LIST OF TREE SEEDS. Because we are often asked where to purchase seeds for various multipurpose trees, we keep several listings. Some sources have been mentioned in earlier issues of EDN. A new one has just come to our attention. We know nothing about them except their catalog, but that has some unusually extensive listings, especially for trees suited to climates found in Australia. For example, there are over 200 different species of Acacia, 19 species of Casuarina, and roughly 240 species of Eucalyptus. Each species is priced for 1 kg, 250 g, 100g and 25 g quantities. Several tropical, subtropical and temperate grasses and legumes for pastures and ground covers are listed as well, often with a choice of varieties. For example, they have 9 species (29 varieties) of Trifolium (clovers), 9 varieties of Medicago (alfalfa). Write to the Australian Revegetation Corporation (Kimseed); 51 King Edward Road; Osborne Park 6017; Western Australia. Phone (09) 446-4377; FAX (09) 446-3444.

33-3 MUSCOVY DUCKS AND FLY CONTROL. The "Heifer Project Exchange" quotes Jim Rankin in Togo. "People are seldom bothered by flies because they keep Muscovy ducks. For a fetish ceremony they killed a number of ducks. He opened the crops to see what they had eaten. Each one was filled with hundreds of flies."

BioOptions vol 1 page 6, 1990, also addressed this subject. Don Mock, extension livestock entomologist at Kansas State University says, "The Muscovy duck and the cattle egret may someday be enlisted as a major natural weapon of defence against the housefly and the horse and deer fly." A Canadian study with dairy calves showed that Muscovy ducks removed 30 times more houseflies than manufactured flytraps, baitcards, flypaper, or flysheets. The ducks also ate spilled feed, eliminating a fly breeding site.

33-3 AN IDEA FOR A SMALL BUSINESS. An Australian businessman heard of a project Tony Campolo's organization had begun in the Dominican Republic in which sandals were made from old tires. This "inspired him to start a business for the poor in Malaysia. He started a small factory in which old tires are being used, not to make sandals, but to be woven into matting for the floors of factories and for outside walkways. This matting was selling so well that his small factory was able to provide employment for more than 40 families." I have no details about how he made the mats.

33-3 ARE YOU INTERESTED IN FORESTRY CONSULTING ASSIGNMENTS? If you are looking for some new challenges when your present assignment ends, this might be of interest. William Helin, with the U. S. Dept. of Agriculture Forest Service, wrote us about a roster of potential consultants maintained by the Forestry Support Program, International Forestry, USDA Forest Service, P. O. Box 96090, Washington, DC 20090-6090 USA (phone 202/453-9575). The list, which currently has 2,600 people, is used when either the Agency for International Development or other development agency requests the help of consultants.

The skills most frequently requested relate to small-scale village forestry, farm forestry, or social forestry projects. Specialists requested include agroforestry, economics, extension, sociology, training, watershed management and wood energy. Other requests are for drylands forestry, nursery operations, plantation management, shelterbelts, and soil conservation.

Requests for longer term assignments are almost always for persons with previous overseas experience, such as with the Peace Corps or private voluntary organizations. Most require either French or Spanish.

33-4 MORE ON CONSULTING AS A CAREER OPTION. Many in ECHO's network have unique combinations of special training, work experience and language proficiency. If you find yourself between jobs, consulting can be an attractive option. Some have even made careers as consultants.

Many firms in the Washington D. C. area specialize in putting together proposals in response to formal "Requests for Proposals" (called RFP's) by government agencies. Most of these positions are not filled by their own technical staff. Rather, they each have large computerized databases with names and qualifications of potential consultants.

I posed the following questions to Walter Price in Washington D. C., who at one time worked as projects coordinator for one of the major contractors.

Q) Explain how this system works.

A) Let's say that an RFP calls for a team that includes someone with an expertise in sweet potatoes and knowledge of Swahili. The project coordinator would contact those people whom the computer identified as having those skills. If you were that person, he would describe the assignment and ask whether you might be available for a certain time period. If you are interested, your resume will be included with the proposal. You are under no obligation to hold that time open, however, because the grant may not be awarded.

Q) If your work is in a remote overseas location, how is he to get in touch with you?

A) That can be a problem. If he cannot find you quickly, he usually has 10 or 50 other qualified people he can call. If you are in a hard to get to place overseas, have someone in the states take calls/FAX for you and have him tell the consulting firm that you will get back to them right away.

Q) This can clearly be a good way to get some interesting assignments. How is the pay?

A) The pay can be very good indeed. However, the government usually has restrictions that do not let your pay exceed your previous salary by more than a modest amount. This can result in some awkward situations for people who have worked sacrificially at very low wages with a non-profit organization. The good news is that with each job you can notch the salary up a bit and eventually catch up.

Q) What about extreme cases? Surely a Peace Corps volunteer or missionary with valuable experience in agroforestry and a masters degree that may have earned less than \$1,000 a month would not be expected to continue working for so little?

A) There is room to negotiate. But if you really want a consulting job, don't scare them off by stating too rigidly your salary expectations. You are far better off to get them interested in you, then talk salary. Do not say you won't work for less than \$150 per day unless you really mean it -- they probably won't call you. Sell them on your qualifications; later argue that you should not be penalized too severely for your volunteer spirit.

Q) It would seem to be difficult to make a career of such assignments because there can be a lot of "down time" between successful proposals that include you. Also, if you are in a remote overseas assignment it may be more difficult to get included in proposals. Is this correct?

A) There can be a lot of down time, but a lot of consultants get hired again and again by the same place(s). For example, I once went to work for the World Bank on a three month contract and left four years later. Actually the kind of contract you have discussed so far is Chapter 1 of a two chapter story. One can sometimes obtain a position quickly through organizations that have won Indefinite Quantity Contracts (IQC's).

Q) What is an IQC?

A) Many government agencies working in development issue "Indefinite Quantity Contracts" for consulting in fields such as agriculture, rural development, urban development, housing, business & accounting, health, education, etc. Their purpose is to enable the government to hire consultants for needs that come up unexpectedly and require too quick a response to follow all the channels of making a request for proposal, etc. Also it would not be cost-effective for the government to do all that paperwork for every small project that came up.

When AID, for example, put out an RFP for an IQC, I had to demonstrate that our firm had the ability to handle the contracts. By the time the contract was awarded, very few of the original experts whose resumes were used would still be available. In effect, they were used to show that we had the capability of fielding such a team of experts.

The IQC obligated us to give service to AID, but neither we nor they knew for sure how much demand there would be for services. The contract assures at least a minimal level of funding (let's say \$500,000) and a ceiling (perhaps \$2,000,000). So we were on-call, usually with very short notice.

Herein lies the key for those who make a successful career of consulting. If you know which firms have current IQC contracts you don't need to waste your time writing to those who have no money. You need to spend time on the street "marketing" yourself, but it should be to agencies with IQC's who at any moment may receive a call asking them to field a team of experts. Don't limit yourself to IQC's in agriculture. IQC's in other fields such as rural development or training and education may need an agriculturalist too.

33-5 Q) How can someone ever learn which companies have these IQC's?

A) The freedom of information law makes this public information (free). Request "a list of contractors with AID IQC contracts," by writing AID; MS/OP/ PS/SUP; Rm 1472, SA 14; Washington, DC 20523-1418 or phone 703/875-1047 (the Office of Procurement).

This next information is less useful, but there may be times when you want to know every agency with an AID contract in your country. The "Yellow Book" is a phone book-sized global listing of all contracts and subcontracts made by AID. Probably the AID office in your country would have a copy.

Q) What are the specialties with IQC's?

A) The latest 17 page listing has the following: accounting and financial management, agriculture, rural development, data processing, development evaluations, development management, energy, foreign language training, health, water supply and sanitation, housing and urban development, macro economic analysis, nutrition, and remote sensing.

Q) Is AID the primary source of contract work for agricultural development?

A) Many consider that assignments with the World Bank, International Development Bank, United Nations, International Fund for Agricultural Development are tops in prestige and pay. However, AID is the real "bread and butter" source.

Q) Without naming names, can you give a couple examples of people who have made a successful career as contractors?

A) I've worked on three assignments with an agronomist from California who is very successful at getting repeat assignments for the World Bank. Several things stand out about him. 1. He is very specialized, i. e. does not claim to be all things to all people. 2. He is extremely productive. Consultants are paid by the day. He makes sure the boss gets his money's worth and that the boss knows that. 3. He does not mix pleasure with work. In the field he is no nonsense: sociable and friendly, but mainly he talks and thinks business. 4. He never loses sight of the fact that the Bank is primarily interested in the final product. His is always done exactly like the Bank wants it and always ahead of time. 5. He avoids controversy. He will discuss anything important to his work, but avoids getting sucked into needless controversies about a project or program and offending colleagues. 6. He is genuinely interested in people. The next time you see him he will ask about your family -- by name -- and will remember everything you have told him. 7. He stays in contact. He

doesn't make a nuisance of himself, but finds ways to let you know he is around and available. 8. He does every assignment like it was his first (i. e. does not get too comfortable and slack off). 9. He dresses like agency colleagues; when in doubt he overdresses. 10. He never makes snide comments about the contracting agency (he leaves that to insiders).

Another example is a Peruvian economist who has worked for 20 years with all the "best" agencies. How does he do it? I have observed him over 10 years. He is a clone of the California agronomist.

Q) Can only US citizens work under IQC contracts?

A) I have checked with both AID and a contractor. Both say that work done under an IQC in another country can use people who are not U. S. citizens.

Q) Do you have any final comments?

A) You'll have something on the line and at the last minute it will fall through. So don't "put all your eggs in one basket."

33-6 SEED FOR MARAMA BEAN, TYLOSEMA ESCULENTUM, AVAILABLE. Thanks to Dr. Geoffrey Stanford at the Dallas Nature Center, we are for the first time able to offer marama bean seed to those working in very arid regions. But what is a marama bean? I rely on the book Tropical Legumes: Resources for the Future by the National Academy of Sciences (EDN 2-1) for the following discussion.

It is a wild plant prized by people living in and around the Kalahari in southern Africa. In Botswana and Namibia it is an important part of the diet in remote regions. It is a rich source of protein and energy in regions where few conventional crops can survive. It grows in some areas that receive up to 800 mm rainfall (32 inches) and in others where rainfall is so slight and erratic that in some years almost no rain falls at all.

The plant has long viny stems, but it is a creeper rather than a climber. They hug the ground, presumably avoiding drying winds. Seed pods contain 1-6 seeds about the diameter of a thumb nail. They are never eaten raw. After roasting they have a delicious nutty flavor that has been compared to roasted cashew nuts. Europeans in southern Africa grind the roasted seeds and use them as a culinary substitute for almonds. Africans boil with cornmeal or grind to a powder that is boiled in water to make either a porridge or cocoa-like beverage. Raw seeds store well and remain edible for years.

Protein content of seeds range from 30-39% (comparable to soybean.) Oil content is 36-43% (about twice that of soybean.) Like other legumes, the protein is rich in the amino acid lysine (5%) and deficient in methionine (0.7%)

During cooler months stems die back, but the underground tuber produces new stems when warm weather returns. The tuber can attain a weight of over 10 kg after a few years. (The plant at ECHO produced a tuber larger than a basketball.) Young tubers are dug in the Kalahari at about 1 kg. Tubers more than 2 years old are fibrous and/or astringent. Baked, boiled or roasted they have a sweet, pleasant flavor. They contain up to 90% water (important to surviving the dry periods) and are an important emergency source of water. [A bit of trivia: I have been told that it is the tuber from which water is squeezed in the movie "The Gods Must be Crazy".] Tubers contain 9% protein on a dry weight basis.

The National Academy report states "Of all the plants described in this book, the marama bean is perhaps the least developed" in terms of scientific study or plant breeding efforts to improve it.

Dr. Stanford sent the following hints on germinating the seeds. Keep them warm (they come from the Kalahari Desert). Seeds germinate after a rainstorm has swept the land, and the soil has moistened deeply, but the surface is drying.

The thick shell, almost 1 mm, is extremely hard. When wetted, it swells tremendously. Then the germ and endosperm will absorb water, and germination starts. But for that to occur, you must first scratch the outside with a file. Do NOT try to hasten germination by dropping the bean into water. Be patient -- let it imbibe slowly by planting it in moist (not wet) soil or potting medium. Plants prefer neutral to acid soil or sand.

Seeds are free to the ECHO overseas network, \$2.50 to others.

33-6 A FLORA OF THE ANDES IN SPANISH. A big "thanks" to Werner Moosbrugger in Colombia for sending us a beautiful new book published jointly by the Corporacion Autonoma Regional de las Cuencas de los Rio Bogota, the Deutsche Gesellschaft fur Technische Zusammenarbeit and Kreditanstalt fur Wiederaufbau. El Manto de La Tierra: Flora de los Andes (332pp) is filled with beautiful color photographs of 150 trees or shrubs of economic value growing in the Andes. It is easily carried, measuring 5x8 inches (13 x 20 cm).

Two pages are given to each tree. One page contains two color pictures: a closeup showing leaves, flowers and seed or fruit and one showing the entire plant. The second page shows family, scientific name(s), common names, a code for the major uses and discussions of morphology, geographic distribution, propagation and growth and particular uses. There are four indices: leaf type, scientific name, common name and climate (hot, temperate, cold).

Werner says "We could make it available for US \$11 plus shipping costs. The book and package we received weighed 1 pound 2.3 ounces. So I would estimate that airmail postage would run from \$5 to \$10, depending on your location. Please order from Werner Moosbrugger; Apdo. Aereo 100409; Bogota 10; Colombia, South America. Fax 235-89-94. (For ECHO visitors or those ordering from a U. S. address only: We are buying 5 copies to save you postage. Add \$1.50 for postage and handling. These will not be regularly stocked at ECHO.)

33-7 NEEM SEED AS A FEED INGREDIENT. As more and more neem trees, *Azadirachta indica*, are planted in reforestation projects around the world, large quantities of neem seed is becoming available. We have written before of the usefulness of neem oil in making a home-grown spray for insects. (Request the ECHO Technical Note: "How to Use the Insecticidal Properties of Neem"). Now four Nigerian scientists have shown that the ground seeds can replace up to 28% of the corn and cotton seed meal in a rabbit ration. ("The Journal of Applied Rabbit Research," vol. 13, pp 125+126, 1990. We will send a copy of the article upon request.)

Fresh neem fruits were soaked for one day, after which the pulp was removed manually and discarded. The seeds were washed, dried several days, then ground. Four diets were prepared, each calculated to contain 18% protein. Each diet was fed to a set of nine rabbits and statistical studies were made of the results.

<u>Feed Ingredient</u>	<u>Diet Composition (%)</u>			
Neem Seed Meal	0	10	20	30
Corn	54	45	36	27
Cotton Seed Meal	18	17	16	15
Fish Meal	2	2	2	2
Blood Meal	2	2	2	2
Rice Hulls	20	20	20	20
Bone Meal	1	1	1	1
Limestone	1	1	1	1
Salt	0.5	0.5	0.5	0.5
<u>Vitamin/mineral mx</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>
<u>Total</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Number of Rabbits	9	9	9	9
Avg. Daily gain(g)	12.1	14.5	11.1	2.14
Avg. Daily Feed Consumption (g)	69	74	74	49
Deaths	0	0	0	3

The statistical analysis showed that the greater daily gain with 10% neem seed meal is statistically significant. The authors speculate that the foul-smelling odor of neem seed meal and bitter taste account for the lesser amount of feed eaten with the highest level of neem.

Note that in these experiments the entire seed was ground. Many farmers might prefer to extract the oil first. This would presumably remove some of the bitter tasting substances. The extracted meal would contain a higher percent of protein, but less energy. Without the oil, the extracted neem seed would presumably more closely resemble the cotton seed meal (meals have had the oil removed) than corn. I would speculate that it could replace cotton seed meal or even soybean meal.

33-7 NEEM SEED AVAILABLE. Neem has presented a special problem for our seedbank. It will only germinate within 3-4 weeks of harvest, and freezes often ruin our crop. We currently place people on a waiting list until we get seeds from our trees or from Haiti. A NOTE TO ANYONE REPRINTING THIS OFFER IN OTHER PUBLICATIONS. Free seed offers are only made to members of ECHO's network, or community development organizations. Individual farmers or gardeners need to send \$5.00 per packet.

33-7 AN ENGLISH TRANSLATION OF THE BOOK ON AFRICANIZED BEES IS AVAILABLE. Reviewed by David Unander. We reviewed this interesting book in EDN #28-7, but had only known of its availability in Spanish. Its author, Dr. Dario Espina, kindly sent us a copy of the English version, covering the same materials and additions to several chapters. The English title is Beekeeping of the Assassin Bees. It is available from ECHO for \$8 plus shipping (\$1 US; \$3 Latin America; \$5 elsewhere.)

On the same subject, debate continues among scientists regarding the extent to which the African bees are hybridizing with European bees as they migrate northward. (All honeybees in the Americas are believed to have been introductions since Columbus). If there is substantial mixing of the populations, it is hoped that the undesired behavioral traits of the African bees, such as aggressiveness, might be modified. At this time evidence seems to suggest that bees of purely African ancestry out-compete the hybrid African-European bees. Several prominent bee scientists believe they have data, however, suggesting that the advancing bees are hybrids. Whether they are or not, they so far do not seem to be changing their behavior. So all of the changes in beekeeping methods recommended by Dr. Espina continue to be relevant. As of this summer, African bees have entered the United States and are expected to ultimately establish themselves from throughout the southern USA to the temperate region of Argentina.

33-8 ECHOS FROM OUR NETWORK. Equatorial Guinea, Terry Waller, "The velvet bean you sent before we were transferred to Bolivia was the most prolific and several church members were growing them in villages.

The K-8 variety of leucaena also grew great and we were able to introduce the concept of agroforestry. A recent letter from one of the farmers mentioned a surprising result: the aesthetic influence of agroforestry. He said that people from all over his neighborhood were coming by his garden (he lives in a very crowded slum area) and having pictures taken. Then they would get interested in the more practical aspects. Poor people like to feel good about their surroundings too.

33-8 Randy Creswell, Mali, "The Khassonkes in Mali have been growing moringa trees for their leaves as far back as anyone's knowledge seems to go. Besides leaves, we have found good profit in a high quality edible oil readily pressable from the seeds. We are planting 1500 moringa seedlings."

33-8 Gary Rohwer, Nigeria, now in U.S.. The nature of the wet, humid growing season makes beans the best crop to fight against hunger and improve nutrition in this area. In particular, the Thailand Long Bean [a cowpea with a 10 inch pod] is a very impressive variety. It resembles a bean which is grown in Nigeria and eaten by the people here, so there is no problem in introducing this variety. The most impressive factor is that this variety grows so quickly. The beans which the people here have been planting only produce once in a growing season, but Thailand Long Bean could be planted three times if not four during the rainy season. I have introduced the bean and people have really been excited about it. If it was planted on a large scale here, they could really see the results.