Technical Note # 39

Introducing New Seeds Overseas

What's Inside:

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INTRODUCTION

We are traveling and have been asked to bring some seeds...

ECHO is frequently asked, by groups or individuals from North America, to suggest vegetable seeds to take with them on short trips overseas. Often the group is a "work team" that is being sent by a church. Someone with the group they are going to visit has asked them to bring vegetable seeds. Or perhaps the group has just decided that it would be a nice thing to do.

GARDENING DIFFERS IN THE TROPICS

Gardening in Florida versus Ohio

Usually North Americans have no idea how different gardening can be in the tropics. I personally experienced some of this when I moved from Ohio in 1981 to become Director of ECHO. I had already purchased seeds for my garden in Ohio when the opportunity arose to come with ECHO. So late in June, I began planting my southern Florida garden. I was perplexed when an older gentleman told me, "Here in Florida we don't grow gardens in the summer. We just let them grow up in weeds and leave them idle till the fall." Now, why would anyone do that?

I went ahead and planted green beans, radishes, cucumbers, zucchini, lettuce, cantaloupe, broccoli, cabbage, etc. I also planted some zinnias and marigolds. There were so many surprises. The heat and humidity, each day, was like what we would only occasionally experience in Ohio. This plus the frequent rains caused diseases to spread quickly. (Wet leaves are just what many disease organisms look for.) Because the soil didn't freeze, insects, nematodes and diseases were not killed off each year. There were pests I had never even heard of that were devastating. In addition to the high atmospheric temperatures, the sun is much more intense at this latitude, heating the leaves even more. Many of my favorite varieties could not handle so much heat.

To my dismay, everything I tried failed - except that I had one cantaloupe. (A raccoon ate it the night before I was going to harvest it.) Even the marigolds and zinnias failed to bloom.

If I had been sent to Florida to show the "natives" how to garden, imagine what a disaster that would have been. Yet that is very much like the situation faced by anyone from North America who goes to the tropics bringing "superior" North American seeds.

Why seeds from North America may fail in the tropics and what should be done

First it should be noted that it makes a great deal of difference to know the latitude and altitude where you are going. At higher elevations, the temperatures are sometimes so mild that many varieties of vegetables from the temperate climates will do well. Even then there will be varieties far superior to others.

Because the hours of sunshine are so much shorter in the tropics than in a northern summer, vegetables may grow much slower than they would, let us say, in Illinois. Vegetables that require long days to produce the edible part (e.g. many onions) may not perform well at all at any elevation in the tropics. Corn that grows six feet tall in Ohio might tassel at 2 feet under shorter days. At high elevations, even near the equator, climates are so moderated that some, but not all, temperate varieties may do well. In the hot, lowland tropics, they may never have a mild climate. Most temperate vegetables will not grow in such places, and any vegetables found in local markets were probably shipped in from the mountains (if the country is fortunate enough to have mountains).

If you are going to visit a site at a higher latitude in the tropics or subtropics (e.g. Honduras or Haiti instead of Ecuador or Zaire), then it may well be that there is a time of year when they have a cooler season with more moderate weather where at least some temperate vegetables can be grown. This is true even at lower elevations because when the sun is at its farthest point in the opposite hemisphere (e.g. in December for the Northern Hemisphere) climates can be mild. If the gardening season comes when the weather is cool and dry, and vegetables can be irrigated, then there will probably be even less problem with disease.

It is absolutely essential to have some input from the group that will be your host. If they give you no more details than to "bring some vegetable seeds," I would be suspicious that they either work in an ideal climate, perhaps at a high altitude where it is cool, or they know little about local gardening. If you are just going to take a few packets, just go ahead and pick out some things and hope they do well. But I would not recommend spending much money without some serious information

1. What is the **latitude** and **altitude?**
2. During what **season** do people grow fruits and vegetables and what is the **climate** like at that time (rainfall, day temperatures, night temperatures, daylength)?
3. What are the **commonly grown fruits and vegetables** in the area?
4. What do the people like to eat?
5. What fruits and vegetables is your host (or the farmers with whom he works) most interested in growing?
6. If these are not in the list (question 3) of commonly grown crops, has he/she ever seen them grown successfully in the area? If not, note that this will be an experiment. There is no certainty of success. You would probably want to purchase small amounts of several varieties of the desired vegetable so the host can do a **variety trial**. If some succeed, then you'll know what to bring in quantity the next time.
7. If seed for fruits & vegetables that are grown locally are requested, are there certain varieties of them that do exceptionally well (or perform badly and should be avoided)?
8. Are there **local businesses or markets** where seeds can be purchased? If so, do they already carry the desired varieties? Is there a particular reason to bring the seeds from outside, knowing the possible risks of encountering problems with customs, when you may be able to find seeds at a local store or market and buy them once you get there?

from your host. There is no quicker way for your host to lose credibility than if people use the new seeds instead of what they might otherwise have grown, only to find that they get nothing to eat from them or do not like what they do harvest.

QUESTIONS TO CONSIDER WHEN SELECTING SEEDS

Here are questions to ask before selecting seeds. This information also helps ECHO make more intelligent recommendations.

RECOMMENDATIONS FOR SELECTING SEEDS FOR USE OVERSEAS

Purpose

Before selecting seeds to take overseas, seriously consider what the purpose these seeds will serve. Are you giving them away as gifts? Are you including them as part of your personal garden? Are they to be part of an observation program to see what new crops may be appropriate in the development of the community?

Availability

Before ordering seed to send or take with you, check out the availability of seed in the region you are working. Is the variety available locally? If it is, you can save time, money and energy by purchasing it locally. For this reason ECHO recommends that you not consider selecting seed until you arrive in the area and are able to see firsthand what seed is available and what new seed you would like to try.

If seed is not available locally, you can be pretty sure it will be safe to bring some. Be aware, however that there may be other viable reasons it isn't locally available.

Remember that giving away quantities of seeds may put local small seed stores out of business. If you want to get seeds to people you and your host are convinced simply cannot afford to buy, even though seeds can be purchased locally, consider donating money (to your host, the practitioner or sponsoring organization) so seeds can be purchased locally. That should increase the chance that they are already known to be adapted to the region and familiar to local growers.

In the preceding section, **Questions to Consider When Selecting Seeds** the questions asked are more easily answered by someone who is living in the area and who has regular access to local markets and farmers.

Who receives seeds?

ECHO sends seed in sample packets, and does not, as a general rule send seed to local farmers. ECHO seed is seed that can be reproduced from the farmers' fields and gardens, so he needn't make seasonal purchases of seed to plant. When ECHO sends seed, we send it to the practitioner (missionary, agricultural agent, Peace Corps Volunteer, et al.) with the recommendation that the practitioner plant the packet of seed him/herself and evaluate how the new crop or variety performs before saving seed and distributing it to local farmers or gardeners. This takes the risk off the farmer's shoulders so he doesn't lose his food supply in case of crop failure. Once the practitioner is satisfied that the seed will perform well in the area, and that the local people are interested in it, s/he can initiate programs to equitably distribute it to local farmers, knowing that with the right care, they should get a crop yield.

Thoughts from the field

A practitioner in Kenya wrote to ECHO regarding seed she had taken for an agricultural project, presuming it would be wanted and utilized well, but realizing something different. Here are some of her comments:

> We also thought the [farm and] tree nursery was a business that helped pay for the training center, that they had a variety of trees there and were keen to learn about more. So, under this impression we handed over most of the seed packets to the head gardener on the farm when we first arrived, thinking he had more farming knowledge than us and that if he grew them, he might have more ownership of them. When we followed up with him, he told us that he planted them, but he hadn't labeled them, saying we would find out what they were when they grew. It seems that he had lost or not planted many of them.
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> Now we try new seeds/projects at our own home and then offer visitors a taste of the produce before handing over seeds. I think I would not take seeds from ECHO before I had lived in the area I would be working in. Generally, a lot is available locally. (Jennifer Davis, ELI)

PITFALLS TO AVOID AND SOME POSITIVE SUGGESTIONS

Tomatoes

It is not uncommon for people who visit or work with tropical farmers to wonder why they grow such small tomatoes. Why not send them seed for some big-fruited tomatoes like we know back home? If you do not see large tomatoes it is because they are extremely difficult or impossible to produce. Tomatoes that bear large fruit will bloom but fruit setting is poor if the daytime temperatures are much over 32°C (90°F) and the average nighttime temperatures over 21°C (70°F). (AVRDC - the World Vegetable Center recommends the optimal average nighttime temperatures for tomatoes to be 15-20°C [59-68°F] with the average daytime high of 30°C [86oF]). Generally speaking, cherry, grape and plum (roma) tomatoes will set fruit at somewhat higher temperatures. So these are often the kind you will find in the market. There are a few large-fruited varieties that have been developed for higher temperatures, such as 'Solar Fire' and 'Tropic,' but availability of a given variety often changes over time.

Onions

Someone from the northern part of the USA or from Canada might send a selection of onion seeds so the farmers could grow better bulbs with good storage ability. When farmers grow the plants, they might find that the onions never form bulbs. That is because most onions respond to long days. If the day length is not greater than a certain amount, the bulbs will never form. The onions are only good for "little green onions" for salads. But there are many "short day-length" varieties that can be found in catalogs, or purchased from stores in the southern USA. These will form bulbs in the tropics.

Squash, pumpkin and cucumber

These vegetables are very susceptible to diseases in hot and humid climates. If the farmers do not use fungicides it may be very difficult to grow them. We have found that the cucumber variety 'Poinsette' is much more resistant to southern Florida diseases than most. ECHO has never succeeded at growing squash in the summer. Tropical pumpkins, sometimes called calabazas, and quite often found in the local markets, do much better than the northern pumpkins.

Green beans

I have never succeeded growing green beans in Florida in the summer. When the weather does moderate in the fall, I have found that the variety 'Contender' is exceptionally resistant to local diseases. You may find that our “snap” green beans that don’t have the “strings attached” are preferable to older, stringier varieties often planted in other countries.

CONSIDERATIONS BEFORE SENDING FREE SEEDS

There are two general aspects that you need to consider. (1) Is a good idea to distribute free seeds and what unintended consequences might result? (2) Is it a good idea to accept an offer from a seed dealer who has a lot of seed left on the shelf after the season and offers to give them to you for use in a developing country?

Impact on small businesses in the country

In the list above of suggested questions is one about whether seeds can be purchased locally. There is a very important reason for that. Free distributions of anything often have unintended impacts on small businesses that may be developing to provide those items. If you are just bringing a few packets for an orphanage or some such situation, go ahead, but if the host mission intends to distribute seeds widely to local farmers, be careful.

Dr. Henry Munger at Cornell University told me that a seed company tried to get started in the Philippines some years ago. About the same time both a U.S. agency and Mrs. Marcos (the wife of the Filipino president) began a free seed distribution program. He believes this put the company out of business. The donors, however soon tired of giving away seeds, leaving the people with no place to buy them.

The owner of a small seed store in a tropical country once told me there was an onion seed shortage in his region the year I visited him. He had used his hard-earned foreign exchange to import onion seed the previous year. Then one day a nearby mission began selling onion seed at much below wholesale price, as someone had given them the seed. The next year the seedsman was wise enough not to get caught with onion seed again, but the mission did not give away seed that year. Consequently there was a shortage of seed for one of the major crops of the region.

In another instance, a seed company representative told me about a Russian geneticist who had been working for several years producing seed and trying to get a viable seed wholesale business going. At the time, he was about to give up because of all the free seed pouring in every year from well-intentioned people and organizations in the West.

What about free seeds pulled from shelves in the US at the end of the season?

Though such seeds can be a blessing, you need to be aware of certain pitfalls. If your idea is to just request seeds and then give them out, please don't. Then reread the first part on the importance of the right varieties for the region and climate.

Poor seed viability

Remember that this seed now has almost no commercial value in the States. There is a reason for that. This is now old seed with no record of how it has been stored or displayed. Though all packets for one variety will look alike, the seeds in one packet may have had a wildly different history on the store shelves than seeds in another. This is especially true if the offer of free seeds comes from a distributor who has pulled the packets from several different retail outlets. One store may have kept all the seed indoors with the air-conditioning turned low. There is not too much risk with this seed. Another store might have kept the seed on a rack outside in the heat and humidity. I see both methods all the time in Florida, at both large and small outlets. The bottom line is that you cannot be sure the seed in any given packet will germinate.

I remember buying several seed packets at the end of the season in Ohio for 10 cents each. What a bargain I thought. But when planting season came the next year some of the packets did not germinate. By then I had missed a few critical weeks of the season. ECHO has planted seeds that were donated to us. Most of the time, the results are excellent. But every so often we have done the work of preparing the soil, planting and watering only to find that the seed was dead. That is frustrating to anyone--and can quickly ruin your credibility. Damage can be even worse. If there is a short period during which gardens must be planted, there might be no time left for replanting. Your effort to save them the cost of seed may have lost them their entire harvest.

Loss of credibility

By the time you have gotten the seed to a foreign country and stored it in barrels in a shed, even originally good seed will have deteriorated. I well remember one man who studied at ECHO for a month before going to Central America to serve as a missionary. During one conversation I went over some of these issues and urged him not to base any project on donated old seed. A year later I visited him and saw many barrels of vegetable and flower seed sitting in an open warehouse. He confessed that as one of his first projects he had gotten some women interested in each having a garden. He had given them the seeds. Hardly any germinated. His credibility with the women was shot.

Seed testing

I would absolutely ***never distribute free seed to farmers unless I had tested its viability first.*** If you have only a packet or two of questionable seed you can just plant a few seeds from each in a pot near your home and see what percent comes up. There is no need to use normal spacing, as this is just a test. But it will be useless to test a packet or two and then distribute dozens of packets of that variety assuming you know they are good seed. As we said, not all packets have been stored in the same way.

There is one way to make sure that the occasional farmer does not get one of these bad packets. Open every packet of that species, mix thoroughly, and check viability in bulk. If it is acceptable, repackage in some manner. You have now created what seedsmen call a “lot” and can reliably predict that a sample from that lot will tell you what you can expect from the entire lot.

Hidden cultural as well as agricultural problems

Even if the seed is good, there can still be problems. Remember, only certain varieties of any given crop may be adapted to your area. For example, crop varieties may differ in susceptibility to disease. Crop growth and production may be affected by temperature, rainfall or day length. (Refer again to the section on “Pitfalls to Avoid.”) And, the crop may produce well but not suit local tastes. Central Americans, for example are famous for having precise expectations of what color, texture and taste a bean should have.

The seed may be good, but the crop simply will not grow in your location. If farmers or gardeners in your area are used to and fond of the idea of experimenting, they may enjoy finding out. (I find this interest in experimenting is not uncommon.) Others may lose interest very quickly. Except to such experimenters, I would never give out seed for a vegetable I had not grown myself or seen grown in the community. (If your climate is mild due to high elevation and rainfall is uniform, there is a good chance that most temperate vegetables will grow. If you are in the hot lowlands, many will not.)

Undermining local businesses

You can disrupt local businesses, as in the passage above. Any retailers who may be selling seeds in your community provide an essential service. If you distribute free seeds on any substantial scale to people who normally buy from a local business, they may stop carrying seed or reduce inventory. What will farmers do in a year or two when you are on furlough for a year or distributing seeds is no longer a priority for you?

Hybrid seed

The seed may be hybrid. For many vegetables, seeds saved from hybrid plants give unpredictable and usually inferior results. If farmers do not save their own seed, hybrid seed might be preferred. But if some farmers save their own seed for the next season, they may be hurt next year and you may not even know you caused it. (We do see a role for hybrid seeds. That is where the hybrid will produce during a season when other varieties will not. Farmers will earn many times the money for an out-of-season crop and might easily be able to pay for the hybrid seed.)

SEED SOURCES

There are numerous sources for seed around the world. ECHO's seed ministry is as a "seed bank" rather than a "seed store" because it is designed to provide seed of potential new crops or improved varieties of existing crops for evaluation purposes. It is not meant to be a routine, annual source of seed for local gardeners. Our goal is that the development worker and eventually farmers or gardeners themselves will save seed each season if the ECHO seed has proven valuable. (However we do sell seeds of selected vegetables to US gardeners.)

In light of the information expressed in this bulletin, we reiterate that the practitioner search local markets and seed establishments for the seed they need before coming to us. It is usually less expensive for them, it supports local commerce and the varieties being sold have likely been selected for that particular region (assuming an experienced seedsman has selected the seed).

Other seed sources may include local farmers, local markets, agricultural colleges and universities and international research stations such as IRRI, the International Rice Research Institute located in the Philippines or CIAT, the International Center for Tropical Agriculture located in Colombia. Many countries now have commercial seed companies that facilitate seed production for that particular area.

If you have other questions about seed with regards to agriculture and rural community development, please contact us here at ECHO and we will be glad to assist you.